



# CLIMATE CHANGE WORKING GROUP MEASURES IMPLEMENTATION PLANS

July 2008 (Revised)

## SUMMARY

In May 2007 staff reported to City Council that Chula Vista's citywide greenhouse gas emissions had increased by 35% (mainly due to residential growth) from 1990 to 2005, while emissions on a per capita basis and from municipal operations decreased by 17% and 18%, respectively. As a result, the City Council directed staff to convene a Climate Change Working Group (CCWG) to develop recommendations to reduce the community's greenhouse gas emissions or "carbon footprint" in order to meet the City's 2010 greenhouse gas emissions reduction targets. The CCWG - comprised of residential, business and community-group representatives - selected seven measures which City Council adopted on April 1, 2008. This report outlines City staff's strategy (summarized in Table 1) to implement the measures and includes an analysis of each measure's funding needs, financing options, timeline and performance criteria:

**Table 1: Summary of proposed climate-related programs and their estimated implementation costs**

CCWG MEASURE #	POLICY/PROGRAM	PROGRAM STRATEGY	ONE-TIME COSTS	ANNUAL COSTS
Administration	Emissions Tracking & Reporting	Track progress in reducing carbon emissions through ICLEI and California Climate Action Registry program participation	-----	\$93,300
1	100% Clean Vehicle Replacement Policy for City Fleet	Replace vehicles through the purchase or lease of alternative fuel and hybrid vehicles	\$350,000	\$160,000
2	100% Clean Vehicle Replacement Policy for City-Contracted Fleet Services	Work with current and future vendors to include a "Clean Vehicle" replacement policy into the bid and contracting process	\$43,000	\$144,000
3	Business Energy Assessments	Through an ordinance addition, encourage businesses to participate in a no cost assessment as part of the business licensing process	-----	\$321,401
4	Green Building Standard	Through a building code revision, require new and renovated buildings to increase their energy efficiency and meet statewide green building standards	\$235,000	\$647,500
5	Solar & Energy Efficiency Conversion*	Provide a cost-effective, streamlined mechanism for property owners to implement solar and energy efficiency upgrades and create a municipal code requiring pre-wiring for solar electric systems	\$75,000	\$347,801
6	Smart Growth Around Trolley Stations**	Implement the 'smart growth' design principles outlined in municipal planning documents	\$620,000	-----
7	Outdoor Water Conservation	Provide a cost effective, streamlined mechanism for installing water saving plants at private/public sites and create new municipal landscape regulations	\$156,380	\$705,150
<b>TOTAL</b>			<b>\$1,479,380</b>	<b>\$2,419,152</b>

\* In addition to annual costs presented, implementation of measure #5 would require issuance of a public bond to cover upfront capital costs for solar and energy efficiency upgrades

\*\* The City has already secured approximately \$20.3 million for related regional smart growth efforts such as the I-5 Corridor Study and the Trolley Grade Separations (E St. & H St.)

## OVERVIEW

Since the early 1990s, Chula Vista has been engaged in multiple climate change forums including the United Nations Framework Convention on Climate Change, the ICLEI Cities for Climate Protection campaign and the U.S. Conference of Mayor's Climate Protection Agreement and has pledged to reduce its greenhouse gas (GHG) emissions or "carbon footprint" 20% below 1990 levels by 2010. To accomplish this carbon reduction goal, the City adopted a Carbon Dioxide (CO<sub>2</sub>) Reduction Plan in 2000 which outlined steps for Chula Vista to reduce energy consumption, promote alternative transportation and design transit-friendly, walkable communities.

Recently, staff conducted a GHG emissions inventory for 2005 to evaluate the City's progress in reaching its emissions goals. The 2005 inventory indicated that Chula Vista's annual citywide GHG levels had increased by 35% since 1990 due primarily to residential growth. During the same period, the City did make significant progress in reducing annual per capita emissions by 17% and avoiding nearly 200,000 tons of GHG emissions annually. In addition, GHG emissions from municipal sources decreased by 18% mainly due to traffic signal energy-efficiency improvements. As a result of the 2005 Greenhouse Gas Emissions Inventory Report, the City Council directed staff to convene a Climate Change Working Group (CCWG) to develop recommendations to reduce the community's greenhouse gas emissions or "carbon footprint" in order to meet the City's 2010 greenhouse gas emissions reduction targets.

The CCWG - comprised of residential, business and community-group representatives - reviewed over 90 possible carbon-reducing measures from July 2007 through March 2008. The group evaluated these measures based on five primary criteria: 1) the measure had been previously implemented successfully by an ICLEI local government or California Climate Action Registry business, 2) the measure would be financially feasible (i.e. require little or no additional General Fund support), 3) the measure could be quickly implemented to have immediate impact on the City's efforts to reduce emissions by 2010, 4) the measure's impacts could be quantified using the City's emissions inventory protocol and 5) the measure would not cause a significant adverse community impact. From this analysis, the CCWG selected seven measures (see Table 1) to recommend to City Council. Council adopted all the measures on April 1, 2008.

This document outlines the City's general strategy for implementing the seven measures, for financing their further design and implementation and for tracking the resulting emissions reductions at municipal operations and citywide scales. In addition, each measure's specific implementation plan provides further clarification and includes the following sections:

**Overview** – A review of the original CCWG recommendation and how it relates to the proposed program/policy

**Program Strategy** – An in-depth description of the programmatic approach for implementing the proposed program/policy including outreach activities and required municipal code or regulatory steps

**Performance Metrics** – The metrics which will be tracked and reported to quantify the performance of the program/policy and its impact on GHG emissions

**Timeline** – A general timeline of important milestones as the program/policy is implemented

**Budget & Financing** – The required funding to implement the program/policy as proposed by City staff

## **STAKEHOLDER OUTREACH**

Since City Council approved the Climate Change Working Group’s recommendations on April 1, 2008, staff has met with a variety of additional community and stakeholder groups. These meetings were designed to allow interested parties an opportunity to provide feedback on the development and implementation of the seven Council-approved measures. Stakeholder groups included:

Building Owners & Managers Association	Otay Ranch Company
Board of Appeals & Advisors	Otay Water District
Brehm Communities	Pacific Southwest Association of Realtors
Building Industry Association (Green Building Task Force)	Pacifica
Chula Vista Chamber of Commerce (Policy Committee & Board of Directors)	Planning Commission
Chula Vista Redevelopment Corporation	ProTec Building Services
Community Housing Works	Redevelopment Advisory Committee
Corky McMillan Companies	Resource Conservation Commission
Crossroads II	San Diego County Apartment Association
Design Review Committee	South County Economic Development Council (Transportation Committee)
Interagency Water Task Force	Sunrise Rotary Club
Jackson Pendo Development Co.	Suntrek Industries
National Association of Industrial & Office Properties (Legislative Affairs Committee)	Sweetwater Authority
Northwest Civic Association	Third Avenue Village Association (Design Committee)

## **MEASURE #1: HIGH EFFICIENCY OR ALTERNATIVE FUEL REPLACEMENT VEHICLES FOR THE CITY FLEET**

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### **OVERVIEW**

Recommendation #1 of the Climate Change Working Group states that the City Council should “require that 100% of the replacement vehicles purchased for the municipal fleet be high efficiency (hybrid) or alternative fuel vehicles (AFVs).” Factors such as the appropriateness for the vehicle task, fueling infrastructure, petroleum displacement, and the overall cost and environmental benefit must be considered in implementing this recommendation. Although the initial costs for each replacement vehicle could be higher than a conventional replacement, fuel savings may offset this initial price difference (ranging between \$5,000 for small sedans to \$70,000 for heavy-duty trucks) over the vehicle’s lifetime. Some alternative fuels may also be less expensive than conventional fuels on a price per gallon and price per gasoline-gallon equivalent.

There are many fuel alternatives available, and each fuel or technology has positives and negatives associated with it. For example, ethanol is more readily available commercially than some other fuels, but ethanol requires more energy to produce it than it delivers when burned. Also, the ethanol production process generates greenhouse gases and ethanol production may be partially responsible for food shortages that are currently driving up the cost and availability of food. Finally, ethanol fuel has special storage and handling requirements that the City is not currently capable of meeting.

Hybrid vehicles use less fuel than regular gasoline vehicles, which results in lower exhaust emissions per mile driven. One negative factor is that hybrid vehicles rely on batteries for part of their motive power, and those batteries pose an additional maintenance expense and disposal issue. Hybrid vehicles are also more expensive to purchase than regular gasoline powered vehicles. Therefore, the City is investigating the possibility of leasing hybrid vehicles to avoid the upfront capital costs and hedge against the resale value of these vehicles as it is unclear what the resale market for hybrid vehicles will be in five or ten years.

Vehicles that operate on compressed natural gas (CNG) are less readily available for purchase than hybrids or ethanol fuel vehicles, and there is very little fueling infrastructure in place. While no American auto manufacturer builds a light-duty vehicle powered by CNG, Honda has released a commercially-available Civic which uses CNG. The City operates its own CNG fuel facility at the Public Works Corp Yard (PWC), but the dispensing capacity is not sufficient for large-scale fueling operations. The cost to up-grade the facility would be several hundred thousand dollars. Another factor mitigating against purchasing or using CNG powered vehicles is that the resale value of such vehicles could be low.

Biodiesel is a good alternative to regular diesel fuel. The fuel is created by mixing vegetable fats from a variety of sources with low sulphur diesel fuel in ratios of up to 1:5 to form B20 biodiesel fuel. The fuel can be used, in most cases, without modification to existing engines, as long as certain operating precautions are followed. At present, it will be necessary to increase fuel storage tank capacity at the Public Works Corp Yard to accommodate biodiesel. The ideal capacity would be 10,000 gallons for each fuel type.

## **IMPLEMENTATION**

Implementation of this policy will require a multi-faceted approach. Each alternative fuel or high efficiency technology has issues that must be considered, such as the carbon footprint of one type of fuel versus another, or extraneous environmental issues or unintended consequences that will arise, as a result of actions taken in support of this implementation plan. The three implementation approaches are:

- (1) The Fleet Management Division will replace cars and light-duty trucks with high efficiency, alternative fuel or ultra-low emissions vehicles as the existing City vehicles become due for replacement, with careful consideration for the total cost to the Vehicle Replacement Fund, and ensuring that replacement vehicles are appropriate for their intended use. This iterative process will take approximately ten (10) years to fully replace existing light-duty vehicles with alternative fuel or hybrid substitutes. Leasing vehicles (instead of purchasing) may require a smaller initial capital outlay, shorten the implementation time and provide greater flexibility to transition to future alternative fuel or hybrid options.
- (2) The existing diesel-fueled vehicles in the City fleet will be converted to operate on B20 biodiesel. This step can be implemented as soon as fuel storage tank capacity is addressed, since there is insufficient fuel storage capacity currently available at the Public Works Corp Yard.
- (3) For heavy-duty trucks for which no adequate alternative fuel or high efficiency technology currently exists, the City will wait to include these vehicle types in the fleet clean vehicle replacement process. It is unknown at this time what or when technology will become available in the coming years to convert these vehicles to alternate fuels. In addition, hybrid heavy-duty trucks are not financially viable at this time. Economies of scale should cause the incremental price difference to drop dramatically in the near future as more truck manufacturers offer hybrid or alternative fuel options.

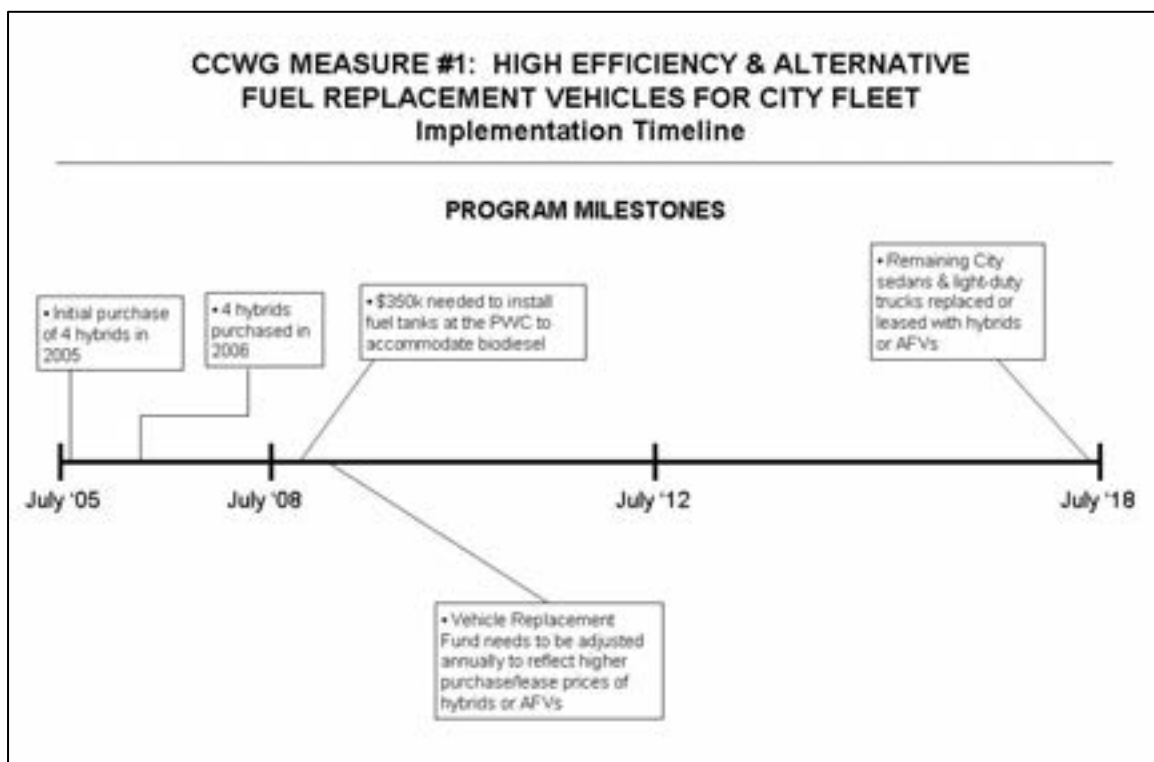
An important consideration in the implementation of this policy is to avoid a large commitment to any particular alternative fuel or technology, until it becomes clearer what fuel or technology will be the “fuel of the future” for reasons of environmental benefit, availability and reasonable cost. It may very well be that hydrogen fuel is financially feasible and readily available within ten years, though it is not feasible now. Whatever the ideal or best fuel or technology may be, a large investment by the City in a different fuel or technology would delay migrating to the most preferred fuel or technology in the future. Although beyond the scope of this implementation plan, the City may need to consider other policy options (such as video conferencing by City employees) to also help reduce vehicle usage and the resulting greenhouse gas emissions.

## **PERFORMANCE METRICS**

The new policy’s performance will be measured compared to a baseline by the following metrics: number of hybrid vehicles in the City fleet, number of other alternative fuel vehicles in the City fleet, number of ultra low emissions vehicles (as defined by the federal and state EPA) in the City fleet, number of gallons of fuel used (by type), average fuel economy for the City fleet (by class of vehicle) and the reduction in greenhouse gases emitted by City vehicles.

## TIMELINE

The timeline (summarized below) is based upon the basic fleet replacement schedule, and uses the replacement guidelines contained therein, modified to reflect current economic conditions. It will take approximately ten (10) years to completely replace the fleet's car and light-duty truck vehicles with hybrid or alternative fuel substitutes. Diesel-powered, heavy-duty vehicles will begin converting to biodiesel once the pertinent infrastructure is installed. More detailed information regarding the municipal fleet replacement schedule (Appendix A) is also included as a reference in this document. The schedule assumes the availability of hybrid or alternative fuel vehicles when vehicle replacement is planned although currently there are not options for all vehicle types. It is anticipated that availability will improve rapidly in the next few years. In addition, the schedule does not include police patrol sedans nor special assignment undercover investigation vehicles. Although police sedans having Flex Fuel capabilities (i.e. able to use gasoline or ethanol) will be available in 2009, ethanol will not be used as an alternative fuel for reasons previously mentioned.



For some off-road construction and maintenance equipment, it will be many years before these vehicle and equipment classes are replaced in the fleet with newer, less polluting substitutes. However, for some high usage equipment classes (such as riding lawn mowers and sewer cleaning trucks), they could be replaced within a relatively short period of time (possibly within six years). In both cases, it is highly unlikely that hybrids or alternative fuel replacement options will be available for those equipment types in the near future. In the interim, diesel-powered equipment will be operated on B20 biodiesel, as soon as the fuel storage capacity issue is addressed.

## BUDGET & FINANCING

Over the ten years during which vehicles and equipment will be replaced with hybrid and/or alternative fuel substitutes, the cost difference between purchasing “clean” vehicles and regular gasoline/diesel vehicles is estimated to be \$1.6 million (averaging \$160,000 annually). In addition, approximately \$350,000 will be required to install tanks to provide biodiesel fueling opportunities. Appendix B (attached) outlines the incremental cost difference each year. It is expected that incremental pricing will decline over time as the technology becomes more widespread and more hybrid models become available for purchase. The program’s budget is outlined below:

**CCWG #1 - Clean Vehicle Replacements for City Fleet - Budget**

<b>Item</b>	<b>One-Time Cost</b>	<b>Annual Cost</b>
AFV/Hybrid Replacement Premium	-----	\$160,000
Biodiesel Fuel Tanks	\$350,000	-----
<b>TOTAL</b>	<b>\$350,000</b>	<b>\$160,000</b>

The Vehicle Replacement Fund will need to be adjusted beginning this year, to ensure that sufficient funds are available to implement measure #1. At present, the Vehicle Replacement Fund is under-funded and currently only has a fund balance of approximately \$950,000. Charges to vehicle user departments must be adjusted to reflect the higher purchase prices that will be experienced as hybrid or alternative fuel vehicles are assimilated into the fleet. This will have a negative impact on the General Fund, since the majority of fleet vehicles are operated by General Fund departments. Projections for the next two or three fiscal years show that there will not be a large number of hybrid vehicles brought into the fleet, based upon recently revised vehicle replacement schedules. Therefore, the immediate impact on the Vehicle Replacement Fund will not be significant. Furthermore, municipal fuel cost savings (estimated at \$306,277 over 10 years based on current fuel prices) from incorporating alternative fuel and higher efficiency vehicles into the fleet will offset a portion of the increased replacement costs.

## MEASURE #2: ENCOURAGE CITY-CONTRACTED FLEET OPERATORS TO ADOPT THE USE OF HIGH EFFICIENCY (HYBRID) OR ALTERNATIVE FUEL VEHICLES

### OVERVIEW

Climate Change Working Group’s recommendation #2 states that “the City of Chula Vista work with fleets under City authority to influence their expanded use of alternative fuels and high-efficiency/alternative fuel vehicles including electric, biodiesel, ethanol, hybrid, hydrogen and natural gas based on appropriateness for vehicle task, fueling infrastructure, petroleum displacement, overall cost and environmental benefit.” Generally, the implementation of this policy will require amendments to the City’s contracting and bid specifications, requiring contractors to incorporate high efficiency (hybrid) and alternative fuel vehicles into their fleet when new contracts are negotiated. The effectiveness of this implementation is dependant upon the alternative fuels infrastructure and vehicle classes in which there are operationally-practical, technically-feasible hybrid or alternative fuel options.

Staff had already begun discussions concerning alternative fuels and hybrid/alternative fuel vehicles with some of the City contractors prior to the Climate Change Working Group’s recommendation. City staff reviewed current contracts and permit processes in relationship to this climate protection measure. Each of these permitted or contracted fleets’ implementation status is detailed below.

### IMPLEMENTATION

#### *Transit*

In FY1998/99, City Council authorized staff to convert the Chula Vista Transit (CVT) fleet from diesel to Compressed Natural Gas (CNG). The first delivery of 15 full-size CNG buses took place in 2001 and 10 more arrived in 2002. In 2005, seven mid-size CNG buses were delivered. Six of these buses were incorporated into the Transit fleet and one was turned over to the Nature Center to be utilized as their shuttle. The current Transit fleet, as summarized in Table 2 below, now consists of 37 buses of which 31 buses are CNG.

**Table 2: Current Transit Fleet Inventory**

<b>Bus Type</b>	<b>Year</b>	<b>Fuel Type</b>	<b>No. of Buses</b>
30’ Low Floor	2005	CNG	6
40’ Low Floor	2001	CNG	10
40’ Low Floor	2000	CNG	15
40’ Low Floor	2000	Diesel <sup>(1)</sup>	2
35’ High Floor	1995	Diesel <sup>(2)</sup>	2
40’ High Floor	1991	Diesel <sup>(2)</sup>	1
35’ High Floor	1991	Diesel <sup>(2)</sup>	1
		<b>TOTAL</b>	<b>37</b>
<sup>(1)</sup> Will remain in fleet. Needed to meet 20% spare ratio.			
<sup>(2)</sup> Scheduled for replacement.			



### *Street Sweeping*

Cannon–Pacific, the City’s contracted street sweeper, currently operates three street sweepers within City limits. The contractor is looking into alternative fuel trucks and related fueling options available for street sweepers and has expressed interest in using alternative fuel vehicles within the current contract term, which may require “significant” contract amendments. Cannon-Pacific fully understands the need for alternative fuel vehicles and is willing to work with the City of Chula Vista to comply with climate protection measure #2.

### *Trash Hauler*

The City’s contract with Allied Waste Services is in its first eight-year contract extension, which expires June 30, 2015. There is a “Clean Fuel Source” clause in the current contract with Allied Waste Services:

*6.2.24 Clean Fuel Source. Pacific shall develop a pilot project for Collection vehicle replacement or conversion to a clean fuel service in cooperation with City within 180 days which identifies Collection vehicles for conversion and provides that conversion will occur if City and Pacific can identify outside funding to pay for (a) the vehicle conversion, (b) incremental cost of new vehicles and (c) costs for a centrally located fueling station. Pacific or its Affiliate will promptly implement a program regarding the purchase of new clean fuel source (e.g., E-rated electricity, propane, natural gas, liquid natural gas, hydrogen fuel cell, CNG, or equivalent clean power and fuel source) for non-Collection support vehicles and on-site equipment using gasoline or diesel (such as fork lifts or generators) upon the replacement of such support vehicles and on-site equipment. Pacific will immediately establish service with a California Green E Utility provider for its on-site electrical power source needs at Chula Vista facilities. City shall permit Pacific and its Affiliates to purchase clean fuel sources from City at a price that does not include any profit for City.*

Allied Waste Services began using biodiesel (B20 Blend) seven years ago and more recently began adding a fuel reformulator, Ethos RF, to improve fuel efficiency and reduce emissions (non-greenhouse gas). This fuel combination, in tandem with all the California Air Resources Board-required equipment (such as particulate traps and catalytic converters), has reduced their opacity readings fleet-wide by 74.5% since 2001 and already placed them in full compliance with 2010 air emission standards. Allied Waste Services operates 52 collection vehicles in the City of Chula Vista.

### *Taxis*

The City does not currently contract with any taxi service, but does license taxis to operate within the City’s boundaries. In order to obtain a license to perform taxi service within Chula Vista, the cab company must submit their cab(s) to a thorough vehicle inspection and fill out the required licensing paperwork with the City of Chula Vista Police Department’s Traffic Enforcement Unit. Of the 179 taxi cabs that are currently licensed to operate within the City of Chula Vista, approximately 51% of the taxis are independently owned and operated. The remaining taxis belong to one of three different taxi cab companies: Red Cab (45 taxis), Eritrean Cab (23 taxis) and Yellow Cab (20 taxis).

In discussions with the three major cab companies, City staff learned that the companies do not directly purchase vehicles, rather they independently contract with individuals to provide insurance, dispatching and name recognition. It is up to each individual cab owner to replace his/her vehicle. All three companies indicated that currently moving to alternative fuels is problematic because there is not an established network of fueling infrastructure to support

vehicle fleets throughout San Diego County. In the past, Yellow Cab tried switching their fleets to CNG but frequently had their vehicles running out of fuel due to the limited infrastructure. As a result, their towing expenses increased dramatically and they reverted back to conventional fuel vehicles.

Another obstacle to incorporating “clean” vehicles into the taxi fleet is the cost increase to individual cab operators. Taxi vehicles are typically purchased as used vehicles. By requiring new AFV/Hybrid vehicles to be purchased instead, operators would not be able to make enough revenue to offset the cost premium of purchasing the new vehicle. This could result in lower service levels within City limits which may directly affect Chula Vista residents and businesses.

#### *Tow Trucks*

The City currently contracts with four tow companies to provide police-initiated tows such as vehicle accident removal, abandoned vehicle removal, negligent vehicle impounds and towing inoperable department vehicles. Staff met with the tow companies to discuss alternative fuel or hybrid options for their fleets. Because the majority of tow vehicles use diesel-based engines, the only practical alternative fuel option for the tow fleet at this time is biodiesel. The closest biodiesel fueling station to Chula Vista is off Interstate 15 at El Cajon Boulevard. Because of the distance (approximately 10 miles) and the limited operating hours (7 am – 10 pm), this is not an economically or environmentally feasible option. Until the appropriate fueling infrastructure is built in Chula Vista, biodiesel use is impractical for the tow truck fleet. For the few non-diesel based tow vehicles, there currently are no alternative/hybrid options for these sized vehicles. However, manufacturers of larger trucks are now developing hybrid vehicles which ultimately could be placed into fleet use sometime in the future.

The current contract with the tow companies expires June 30, 2011. As a new contract is eventually pursued, staff will reassess local biodiesel availability and other relevant AFV/Hybrid replacement options. If there are feasible options, language will be added to the Request for Proposals outlining the City’s Policy for AFV/Hybrid vehicles.

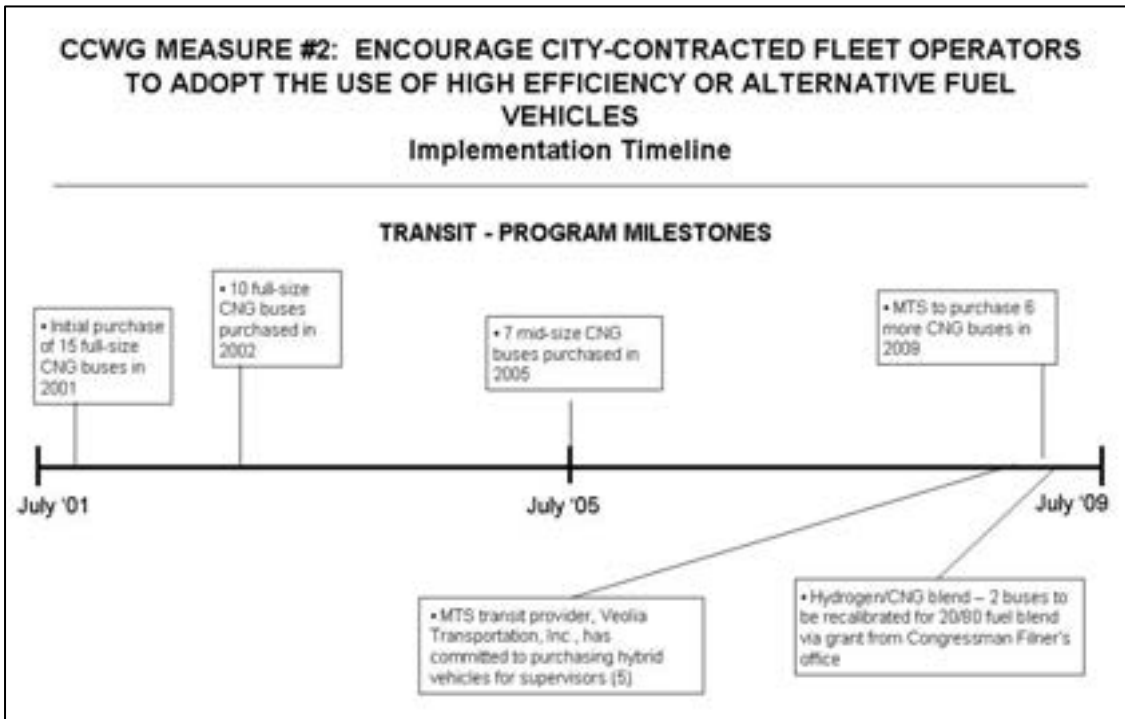
### **PERFORMANCE METRICS**

As a performance measure, the City will require an annual vehicle list from contractors which may contain, but is not limited to, the vehicle fleet number, make, model, age and fuel type of each vehicle. Through this annual inventory, the City will be able to track each contractor’s progress in incorporating hybrid and alternative vehicles into their fleets.

### **TIMELINE**

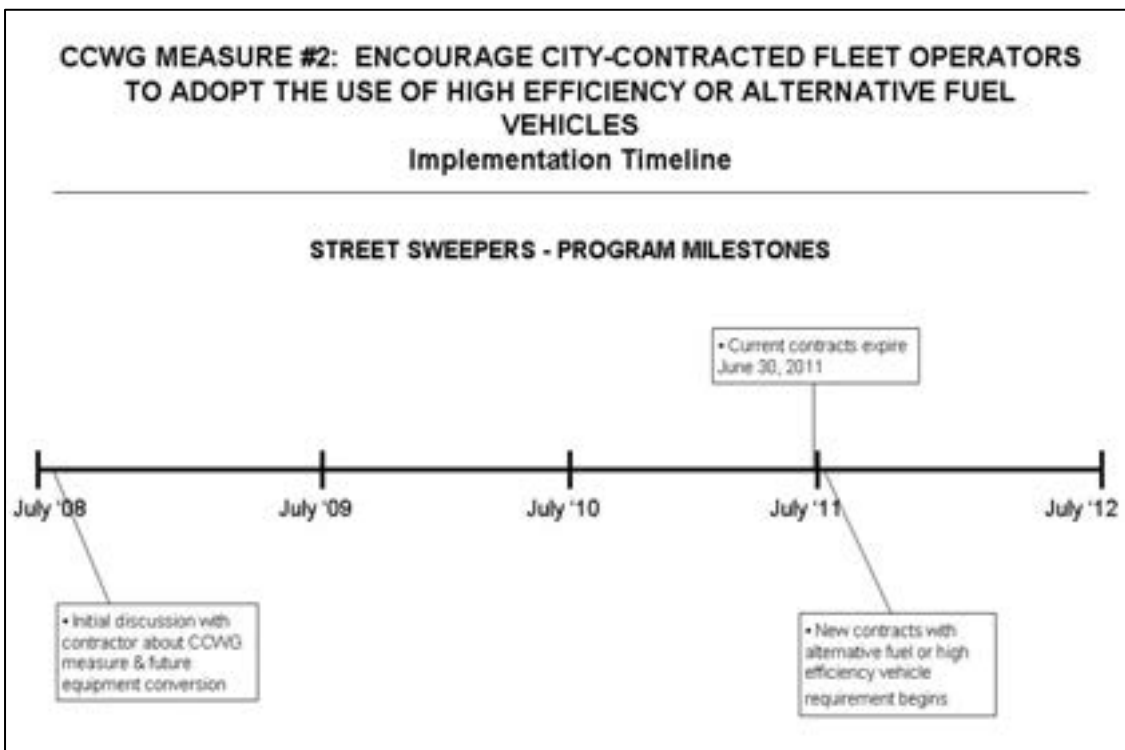
#### *Transit*

The Metropolitan Transit System (MTS) has approved the funds to purchase six additional CNG buses for the Chula Vista Transit fleet during CY 2009 which will result in 95% of the fleet being powered by an alternative fuel. Additionally, Chula Vista and MTS are under the California Air Resource Board’s (CARB) Alternative Fuel Path, which commits both agencies to purchase only alternative fuel buses. Chula Vista Transit’s contractor, Veolia Transportation Inc., has also committed to purchasing five (5) hybrid vehicles for their road supervisor staff. The implementation timeline for transit vehicle replacement is summarized below:



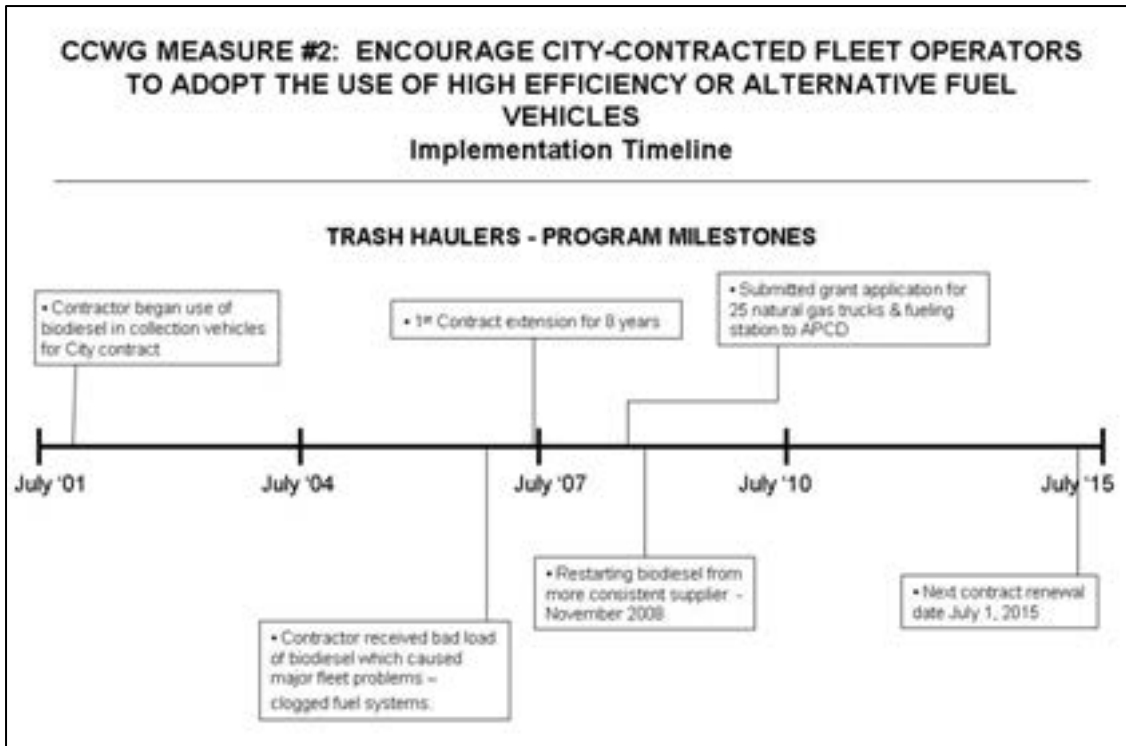
*Street Sweeping*

Cannon–Pacific is willing to start converting to alternative fuel vehicles prior to the end of their current contract term which expires June 30, 2011. The implementation timeline for street sweeper vehicle replacement is summarized below:



### Trash Hauler

Over the last two years, Allied Waste has continued to evaluate biodiesel suppliers who could provide a consistent, high quality fuel source. One potential source is a company called New Leaf which is building a biodiesel manufacturing facility in Otay Mesa. The facility will use cooking oil as its fuel base. Allied Waste Services has already begun to meet with New Leaf to work on establishing standards and a possible purchasing agreement. The implementation timeline for trash hauler vehicle replacement is summarized below:



### Taxis

The timeline for transitioning taxi vehicles to AFV/hybrids is unknown due to the reasons stated above (cost effectiveness & fueling infrastructure).

### Tow Trucks

When the current tow services contract expires in June 2011, there should be greater biodiesel availability in Chula Vista as well as greater availability of other AFV/Hybrid truck options capable of performing tow operations.

## BUDGET & FINANCING

While there is some grant funding available for specific equipment/models and conversions, it is expected that there will be some cost increases or longer contract terms required for contractors to be able to amortize the capital investments from complying with the City's "clean" vehicle replacement policy. The program's budget is outlined below:

**CCWG #2 - Clean Vehicle Replacements for City-Contracted Fleets - Budget**

<b>Item</b>	<b>One-Time Cost</b>	<b>Annual Cost</b>
HCNG Blend Project - Buses	-----	\$144,000
H2ICE - Van	\$43,000	-----
<b>TOTAL</b>	<b>\$43,000</b>	<b>\$144,000</b>

*Transit*

The Metropolitan Transit System has approved the funds to purchase six CNG buses for Chula Vista Transit which are anticipated to arrive in 2009. The City has received a \$738,000 earmark from Congressman Bob Filner’s office for a Hydrogen/Compressed Natural Gas (HCNG) blend project. Two CNG buses will be recalibrated to operate on a 20/80 HCNG fuel blend. Using the HCNG blend reduces all emissions. An immediate and significant benefit comes from a 50% reduction in nitrogen oxides (NOx) compared to CNG. Approximately \$5,000 - 6,000 per bus/month will be required to produce the hydrogen required to operate the buses. Transit funds will continue to be able to fund the CNG fuel use, but additional funds will be needed to cover the incremental cost of the hydrogen production.

Ford Motor Company has provided the City one (1) experimental Ford Hydrogen Internal Combustion Engine (H2ICE) 12-passenger shuttle van, which will be based on the Ford E450 platform for the purpose of aiding both Ford and the City to demonstrate and evaluate the performance characteristics of such a vehicle. The City of Chula Vista proposes to use the H2ICE as the transportation means for visitors to the Chula Vista Nature Center. The cost of electricity to generate the hydrogen by the City’s hydrogen electrolyzer is estimated at \$2,400 per month. The extended cost over the term of the project is estimated to be \$43,000.

*Street Sweeping*

Cannon–Pacific has expressed an interest in starting the alternative fuel vehicle implementation within the current contract term, which may require “significant” contract amendments such as additional fees or costs.

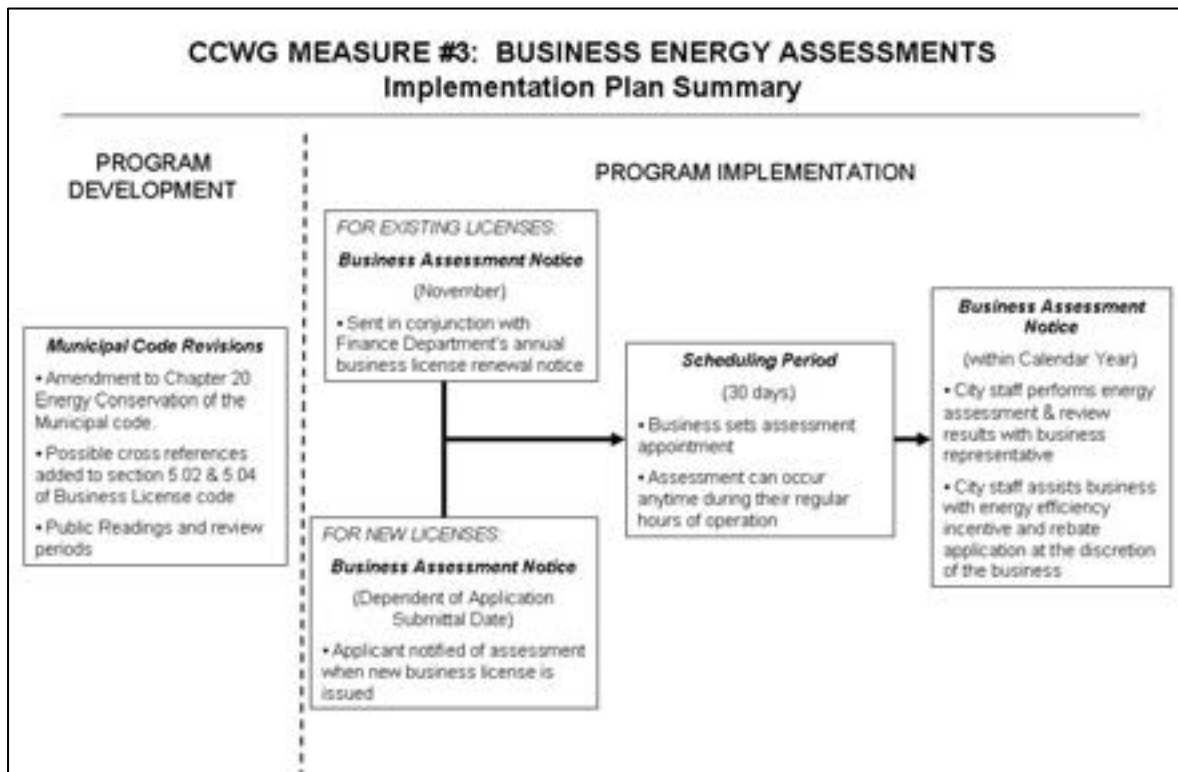
*Trash Hauler*

Allied Waste Services has recently submitted a grant application to the Air Pollution Control District’s Carl Moyer Fund to purchase 25 CNG trucks and a fueling station for its Chula Vista fleet. They are also researching the feasibility of using landfill methane gas for fueling purposes.

## MEASURE #3: BUSINESS ENERGY ASSESSMENTS

### OVERVIEW

The measure, as adopted by City Council, would encourage through a new municipal ordinance commercial and industrial businesses to participate in an energy assessment of their premises. The measure is intended to help businesses identify energy efficiency opportunities at their facilities and, if desired, take advantage of applicable rebate and incentive programs for energy efficiency improvements. The assessments, which would be offered at no cost, would only apply to businesses with a physical storefront and/or office and would be encouraged when a new license is issued or every three years for a renewed business license. The business energy assessment process is graphically summarized below:



### IMPLEMENTATION

The Department of Conservation & Environmental Services will administer the program with anticipated support provided by the Finance (Business License Division) and Information Technology Services (IT Programming Division) Departments. Staff is recommending that the business energy assessment be codified through Title 20 – “Energy Conservation” of the Chula Vista Municipal Code (see Appendix C for example of conservation-focused municipal code applying to all Chula Vista businesses). Specifically, the municipal code would be augmented to include the following concepts:

All commercial and industrial businesses in the City of Chula Vista are encouraged to cooperate with City staff or their delegate to conduct a free energy assessment of their facilities when a new business license is issued or once every three years for an existing

license by providing; 1) a date and time for the assessment convenient for the business, 2) access to their facilities for the assessment during their regular business hours, 3) authorization (voluntary) to access their *Energy Waves* account (a San Diego Gas & Electric energy analysis tool), and 4) a signature and title of a facility manager on a completed assessment form acknowledging that the business has received a completed assessment and relevant information about potential energy efficiency improvements to implement at the business's discretion. For multi-tenant commercial buildings, the property manager may authorize a whole building assessment replacing the need for individual tenant assessments.

Assessment Notification Process: The City will send a written notice to each business at least once every three years in conjunction with the City's annual business license renewal mailer informing the business of the opportunity for a free energy assessment and providing information that allows a business to schedule an appointment at their convenience. A business shall also receive a business assessment notice whenever a new business license is required such as the establishment of a new business or transfer of ownership for an existing business.

Assessment Deliverables: The assessment findings shall be provided to the business on a form established by the City Manager in conjunction with the local utility and business representatives, including a chart of their energy consumption over the past 18 months (extracted from their *Energy Waves* account) and an estimate of their potential energy and financial savings as well as the corresponding greenhouse gas (GHG) reductions based on state-approved GHG accounting protocols. The assessment may also review alternative transportation options which the business could implement and/or promote to its employees and customers and the resulting GHG reductions. The City shall provide any available forms and an offer of assistance to complete the forms and process for accessing available state and/or local rebates that reduce the cost of implementing the voluntary energy efficiency improvements.

Businesses are not required to implement improvements, however, businesses may at their discretion request additional assistance from the City or its designee to be trained on how to use *Energy Waves* and implement any or all of the measures selected by the business as the most cost effective choices for reducing energy consumption. The City shall also provide contact information for the local Utility's Account Executive or other staff designated by the Utility for a specific program that may assist the business in reducing its energy costs.

Exemptions: An energy assessment may not be necessary for new businesses occupying a commercial space which has completed one of the following: 1) been permitted by the City Building Division within three years for a remodel or new-construction to meet the most current City Title 24 and above standards, 2) has been certified through a California Energy Commission-certified (or other applicable state agency) green building program, or 3) has already received an assessment within the last three years. In addition, Assessments are not necessary for home offices, mobile businesses and other business entities that do not have a utility gas or electric meter on a commercial rate schedule.

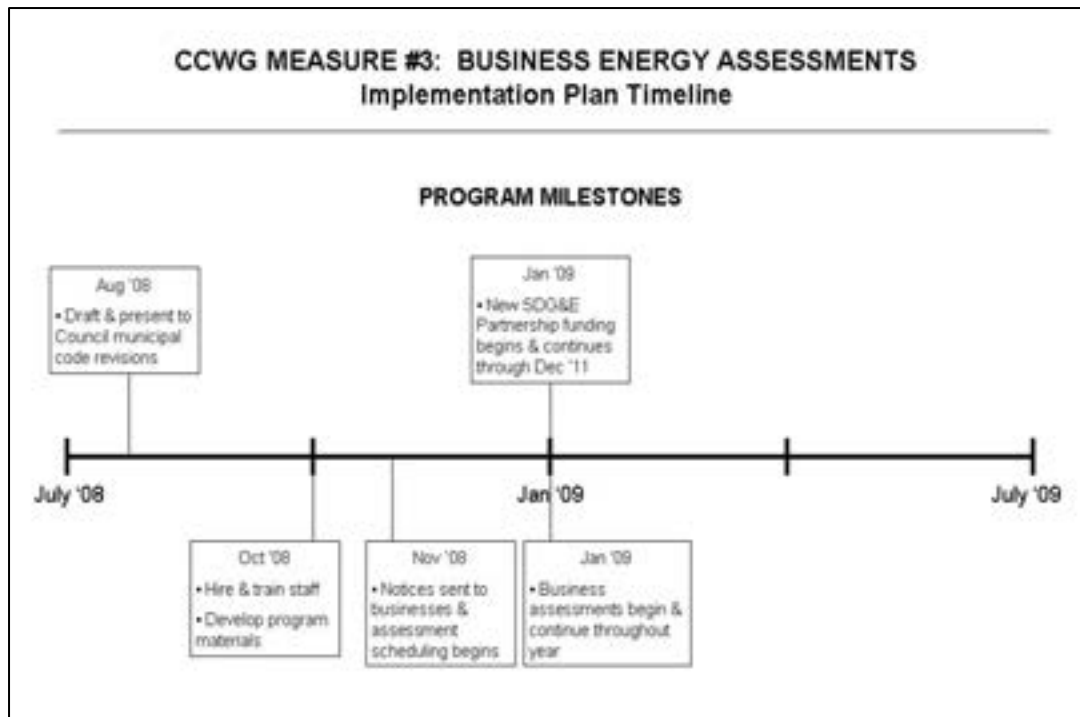
## PERFORMANCE METRICS

The business energy assessment program's performance will be measured by a suite of metrics including the number of assessments performed, number of energy efficiency improvements identified and the corresponding potential kWh/Therm savings. In addition, the number of businesses implementing new alternative transportation policies or programs will be tracked. Staff will investigate the possibility of receiving aggregated customer information from SDG&E to quantify the number and amount of incentive funds solicited as a result of the business assessment process.

In the City's current greenhouse gas (GHG) inventory protocol, the business sector's carbon emissions are directly quantified by extrapolating business energy use from aggregated community data provided by SDG&E. While the proposed program does not require businesses to adopt energy efficiency improvements, it does help them to understand and apply for SDG&E rebate and incentive programs that could lead to increased energy conservation. Over the last two years, City staff has visited over 2,000 businesses and identified over 800,000 kWh in potential annual energy savings (equivalent to over 700,000 lbs of carbon emissions) as part of the current program. Encouraging an energy assessment as part of the business license renewal process will greatly expand the potential for immediate emissions reductions and provide opportunities for businesses to lower their monthly energy costs.

## TIMELINE

Implementation would require an amendment to Chapter 20 "Energy Conservation" of the Chula Vista Municipal Code and potentially a cross reference amending the Business License code sections (5.02 & 5.04). Ordinance notice, first reading and second reading would take approximately 40 days. Some items may require review by other agencies which may also take an estimated 45 to 60 days. The program's timeline is summarized below:





## BUDGET & FINANCING

The proposed program's implementation cost is estimated to be \$321,400 per year in staffing, supplies and services (summarized in table below). This program cost assumes full funding of all seven CCWG measures and will leverage each measure's budget to provide partial cost sharing of staff time and program materials. For example, staff visiting businesses to perform energy assessments will also be able to promote other climate-related programs such as the Solar Conversion (CCWG Measure #5) and Turf Lawn Conversion (CCWG Measure #7) programs leading to lower implementation costs for each program and increased program participation. A portion of each measure's budget will also partially cover overall administrative and performance tracking costs associated with the City's climate protection efforts. The program's budget is outlined below:

### CCWG #3 - Business Energy Assessment - Budget

Item	One-Time Cost	Annual Cost
City Staff	-----	\$111,600
Interns	-----	\$146,800
Marketing	-----	\$16,000
Other Commodities	-----	\$47,000
<b>TOTAL</b>	-----	<b>\$321,400</b>

\*Assumes cost sharing between CCWG Measures #3, 5 & 7  
Probable funding by SDG&E/CPUC through Dec 2011

The City, through the Department of Conservation & Environmental Services, currently offers a voluntary business energy assessment program which is funded through a California Public Utilities Commission (CPUC)/San Diego Gas & Electric (SDG&E) grant through December 31, 2008. The grant only provides funds for the assessments and not incentives for businesses to implement the identified energy efficiency improvements. Staff has submitted a new grant proposal to the CPUC/SDG&E to continue funding the business assessment program through December 31, 2011. To ensure the program continues beyond future grant funding cycles, staff would recommend that the program should be funded through a more broadly applied Fee Authority structure. A Fee Authority would provide staff with greater flexibility to address future business growth and increased personnel and supply costs as the program and economy evolve.

## **MEASURE #4: GREEN BUILDING STANDARDS**

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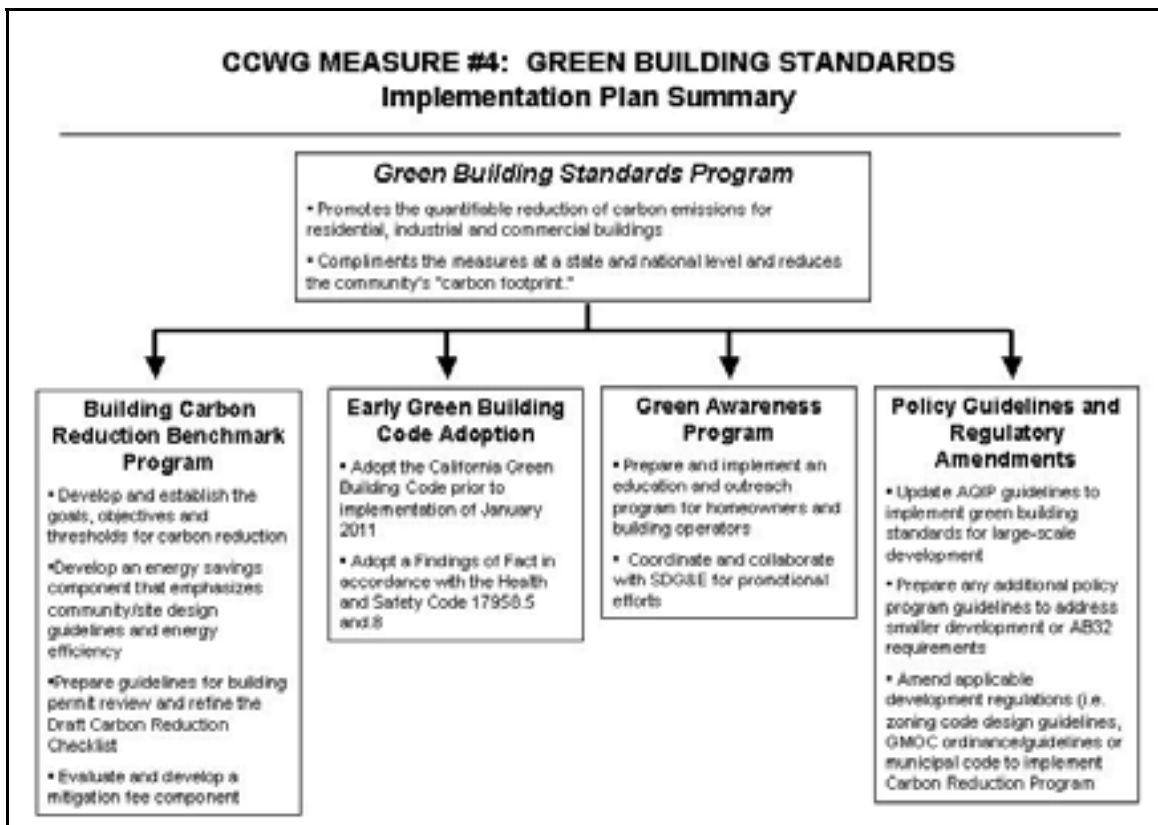
### **OVERVIEW**

The City of Chula Vista Climate Change Working Group's (CCWG) recommendation #4 urges the City to adopt community-wide green building standards that are comprehensive in coverage and mandatory. The CCWG recommended that new and substantially renovated structures be required to be built to LEED Silver or to an equivalent third-party certification green building program, with the effect of having an energy efficiency impact of at least 20% over current Title 24 requirements. However, there is not a straight-line relationship between green program certification or Title 24 performance and carbon reductions. For this reason, City staff recommends an approach that focuses directly on carbon emission reductions. Reductions in energy use by buildings are among the easiest carbon-reducing actions to quantify and lessen the community's "carbon footprint."

As approved by City Council, Chula Vista will implement a citywide, mandatory green building standard for new construction and major renovations. The new standard will have 3 main components: (1) a minimum energy efficiency (carbon equivalent) requirement of 15% above Title 24 - 2005, (2) the early adoption of the new California Green Building Codes for all residential and commercial projects and (3) a Carbon Offset Fee available for projects not meeting the 15% above Title 24 threshold. The City will re-evaluate its Green Building Standard in summer 2009 when the revised Title 24 becomes effective. The Chula Vista Green Building Standard will complement green building measures at the state and national level, and place a high priority on reducing the carbon emissions of buildings in Chula Vista. The innovative program provides an equitable solution for new and retrofit, as well as residential, industrial and commercial buildings. Furthermore, the proposed program meets, and in the case of commercial projects exceeds, the initial reduction targets outlined by Architecture 2030, a nationally-recognized movement in the building/architectural community to make new buildings "carbon neutral" by 2030 (Appendix D).

### **IMPLEMENTATION**

The City of Chula Vista Planning and Building Department, Building Division, is responsible for confirming that all commercial, industrial and residential construction projects meet the minimum requirements of the State and locally mandated construction codes. They also provide plan check and associated inspections. The Planning Division is responsible for promulgating policy and regulations and administering them for land use, site design and zoning. Building Codes, land use policies, zoning ordinances and design guidelines all can contribute to the goal of meeting this objective. The Chula Vista Green Building Standards program will focus on reducing carbon emissions and contains the following four components: (1) Develop and implement a Chula Vista Building Carbon Reduction Benchmark Program, (2) Early adoption of the California Green Building Code, (3) Preparation and Implementation of a Green Awareness program for homeowners and building operators, and (4) Adoption of new zoning ordinances and design guidelines. The implementation process is graphically depicted below:



Development of a Building Carbon Reduction Benchmark Program

Staff will work to develop and implement a Building Carbon Reduction Benchmark Program, which would recommend that all new construction and remodels reduce and document reductions in carbon emissions compared to the minimum results that would be achieved through compliance with the applicable version of California Title 24 energy standards. The proposed program will allow developers the flexibility to determine how best to meet these requirements, which will offset the burden associated with meeting an additional procedural requirement. This program would provide a level playing field for new and retrofit, as well as residential, industrial and commercial buildings, and would help accomplish the goals of the Chula Vista CO<sub>2</sub> Reduction Plan.

In coordination with stakeholders, staff would begin with developing the framework of the Building Carbon Reduction Benchmark Program to attain 15% greater carbon reduction than current Title 24 requirements and establish the goals, objectives and proposed thresholds to accordingly reduce overall carbon emissions for all new development. Staff will then prepare an energy savings component that includes both community/site design guidelines and energy efficiency measures. As a part of this effort, staff will prepare guidelines for building permit review and further refine and/or supplement the Chula Vista Carbon Checklist (Appendix E). This checklist shows emission reductions for various Development Credits as well as Energy Efficiency Credits for both Prescriptive and Performance Paths. As a part of this program, staff will evaluate a range of proposed carbon emission thresholds. As an example, proposed thresholds may require a reduction in carbon emissions of 15 pounds per 100 square foot in Climate Zone 7 and a reduction of 35 pounds per 100 square foot in Climate Zone 10 based on the applicable version of Title 24. Chula Vista straddles two different climate zones. The bulk

of the City rests within Climate Zone 7 while the far east of the City is in the more rigorous Climate Zone 10 (Appendix F). These values represent the approximate carbon savings achieved when exceeding Title 24 by 15%. The Chula Vista Carbon Reduction Checklist will need to be completed by the builder for each permit.

The savings can be accomplished in two different areas: (1) community/site design and (2) energy efficiency. The first typically applies to larger scale projects, and the Planning and Building Department will ensure that future long range plans such as Specific Plans and Sectional Planning Area (SPA) Plans include community/site design and energy efficiency components through policy and regulatory changes as presented in the “Policy Guidelines and Regulatory Amendments” section. Community/site design features generally manifest carbon savings through reducing vehicle miles traveled (VMT), and associated tail pipe emissions, by increasing emphasis on other travel modes such as walking and transit use through means including: expanded pedestrian/bike connections, expanded transit plans, mixed-use development, and increased density. Additional efficiency can also be gained through site design features that optimize the potential for renewable and advanced energy-efficient technology uses (i.e. solar orientation, cogeneration and district energy systems).

While all of these features can lead to carbon savings, the establishment of baselines and the quantification of savings for community design measures are less direct than with energy efficiency measures, and at present there are not well established metrics. This is one of the primary focuses of the active Chula Vista Research Project (CVRP) with the National Energy Center for Sustainable Communities (NECSC). The CVRP/NECSC team is currently conducting studies to produce a set of clear modeling assumptions, a detailed description of their methodology and specific emission reduction values for alternative community/site design features. Their work will not be completed for several months. Staff will also need to carefully work with the CVRP outputs and the NECSC team to define and establish these baselines and features, and balance their use along with desired energy efficiency savings. To accomplish development of the community/site design component of the Green Building Standards Program, staff envisions a multi-step process which will include the following: (1) establishment of a community/site design Working Group, (2) scoping and evaluation workshops, (3) compose a draft standard and conduct a rating simulation, (4) revise the draft standard and solicit stakeholder input and (5) complete and issue the final community/site design standard for Council consideration as part of the overall Green Building Standards Program. Individual project savings will need to be quantified by the developer or builder with PLACE<sup>3</sup>S, Community Viz, URBEMIS or other appropriate software used to calculate energy generation and efficiency options as a function of land use and development choices as determined through the CVRP. The Planning and Building Department will evaluate these products to determine which is preferable for use in the Program.

Builders will also be able to accumulate carbon savings through energy efficiency. There will be three avenues for them to accomplish this: (1) a prescriptive path where the builder selects features that will deliver the necessary savings, (2) a performance path where the builder uses California Energy Commission-approved software to quantify the energy savings (and thus carbon savings) of specific efficiency measures and (3) renewable energy production. The prescriptive path is available to residential construction and remodels; however, commercial buildings must follow the performance path. The third method for builders to reduce carbon

emissions is to include on-site renewable energy. Technologies that shall qualify include: solar photovoltaic systems, solar hot water systems, geothermal systems (geoexchange) and small scale wind turbines. The building will be credited with carbon savings based on the size of the system installed. This compliance method will be available to all building types. The City will re-evaluate the Green Building Standard's 15% threshold in summer 2009 when the revised Title 24 becomes effective.

The program will include a mitigation fee component should a builder choose or otherwise not be able to effectively meet the additional CO<sub>2</sub> savings requirement on-site. The fee will equate to the cost of exceeding Title 24 by 15%. The fee will establish a dollar value per pound of necessary carbon offset by building type. Preliminary estimates from our consultant, ConSol, indicate that the fee may be approximately \$2.50 per pound of carbon plus administrative costs. By focusing on pounds of carbon per square foot, the City can utilize the same set of ground rules for residential and commercial construction, new construction and remodels, custom homes and large developments. Builders shall also have the option of opting out of the checklist if they demonstrate through CEC certified software that they exceed Title 24 by 15% or more.

#### Early Adoption of California Green Building Code

The Building Standards Commission (BSC) and Department of Housing and Community Development (HCD) have developed a California Green Building Code (CGBC), which will apply to non-residential and residential construction, respectively. The BSC regulations for non-residential buildings is currently intended to be a voluntary code, while the HCD version for housing three stories or less will become mandatory by State Law on January 1, 2011. Since the mix of Chula Vista permits weighs heavily on residential (80/20), it is recommended that the California Green Building Code requirements be used for both residential and commercial buildings.

Please note that the plumbing provisions of CGBC do not become effective until July 1, 2011. The plumbing measures have a delayed adoption to ensure that enough of the required product (fixtures, showerheads and toilets) will be available to meet market demand when the code is adopted. The CGBC includes many best practices among the existing green programs. The water savings, construction waste reductions, and the Volatile Organic Compound (VOC) limits for paints, adhesives, and carpets can be mainstreamed into construction practice with minimal cost impact. The provision of the CGBC that has the largest cost impact is the requirement for 1.28 gallon per flush toilets. Currently, a 1.28 gallon per flush toilet is ~\$250 more expensive than a current 1.6 gallon per flush toilet.

It is recommended that Chula Vista adopt the HCD California Green Building Code as it will be approved this summer. If Chula Vista adopts this code before the implementation date of January 1, 2011 and/or expands its scope to include commercial buildings, the City will need to adopt a Findings of Fact per Health and Safety Code 17958.5 and 17958.7. This is a finding that states that the new municipal code is reasonably necessary for climatic, geologic or topographic conditions. The new code would not be effective until the Findings of Fact were filed along with the ordinance to the Building Standards Commission.

The requirements of the HCD California Green Building Code are:

<b>406.2 Site Development:</b>	Plan for storm water drainage and retention during construction; retention basins; storm water filtered by a barrier system to public drainage; compliance with storm water management ordinances
<b>503 Energy Efficiency</b>	Performance requirements meet current T-24
<b>506.1 Air Sealing Package</b>	Joints and openings must be sealed to the CEC energy standards currently in effect
<b>603 Indoor Water Use</b>	20% reduction in potable water use; each plumbing fixture 20% reduced flow rate: showerheads - 2.5 to 2.0 gpm, bathroom and kitchen faucets - 2.2 to 1.8 gpm, toilets - 1.6 to 1.28 gal/flush.(1.28 gpf toilets are required by code as of 7/1/11) or calculation demonstrating 20% reduction in water use baseline
<b>705.3 Covering of Ducts &amp; Mechanical Equipment</b>	From rough until final all ducts shall be covered to reduce dust and debris which may collect in the system
<b>709.2 Construction Waste Reduced</b>	50% reduction of non-hazardous construction and demolition waste or local ordinance, whichever is more stringent (exception: excavated soil and land-clearing debris)
<b>711.2 Building &amp; Maintenance Manual</b>	Provided to building owner
<b>804.1.1 Adhesives and Sealants</b>	Adhesives and sealants used on the project shall meet the requirements of the following standards: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants and sealant primers shall comply with South Coast Air Quality Management District (SCAQMD) Rule #1168; and 2. Aerosol adhesives shall meet the requirements of California Code of Regulations, Title 17
<b>804.1.2 Paints &amp; coatings</b>	Architectural paints and coatings shall comply with South Coast Air Quality Management District (SCAQMD) Rule #1113.
<b>804.1.3 Carpet &amp; carpet systems</b>	Shall be low VOC
<b>804.1.4.1 Particleboard and medium density fiberboard (MDF) used in interior finish systems</b>	Shall be certified to ANSI A208.1 and A208.2 (low formaldehyde emission standards)
<b>804.1.4.2 Hardboard plywood used in interior finish systems</b>	Shall be certified and comply with ANSI/PHVA HP-1-2204 and U.S. HUD Title 24, Part 3280 (low formaldehyde emission standards)
<b>805.2.1 Vapor retarder and capillary break installed for slab on grade foundations</b>	Min. 4" of ½" clean aggregate base between vapor retarder and slab
<b>805.3 Moisture content of building materials</b>	Building materials with visible signs of water damage, mold or other biological growth shall not be installed; interior walls and floors shall not be enclosed if framing members exceed 18% moisture content or if insulation is wet or have a high moisture content
<b>806.3 Bathroom exhaust fans</b>	Exhaust fans shall be provided from each room containing a bathtub, shower, or tub/shower combination; exhaust fans shall comply with ASHRAE 62.2, Section 5; exhaust fans shall be ENERGY compliant; exhaust fans shall terminate outside the building
<b>806.4 Filters</b>	HVAC filters shall be rated at MERV 6 or higher. Filter grills and duct systems shall be sized to prevent pressure drop across the filter.

Unlike other green programs, however, there is no requirement in the HCD portion of the California Green Building Code to exceed Title 24. It is the energy efficiency portion of any green program that is responsible for the carbon dioxide savings. Thus, the HCD program on its own will do little to combat global warming, but when paired with a City requirement to reduce carbon, the HCD program is on par with the other green programs found nationally and throughout the state. The HCD language is closely modeled on the soon to be published ANSI 700 National Green Building Standard. The City of Chula Vista Growth Management Ordinance currently requires a Water Conservation Plan (WCP) to be submitted with all Sectional Planning Area plans, tentative subdivision maps, or with major development projects. In May 2003, the City adopted WCP guidelines in order to implement this requirement. As a companion component to this program in the Turf Lawn Conversion program (measure #7), the City would review the state Model Landscape Ordinance and update the Landscape Manual and WCP guidelines to encourage additional water savings.

City staff and builders will need to be trained on the requirements of the California Green Building Code. Since this training will ultimately be necessary, focusing on the California Code eliminates the need to train for a local green building code now, and the California code later.

#### Green Awareness Program

An education and outreach effort will help to highlight energy saving steps homeowners and building operators can take to help reduce their carbon footprint. The science and findings behind the CCWG's measures should be made available to the public. Education and outreach efforts should include what the CCWG recommendations say and why they should be implemented. Distinctions should be presented between basic Energy Code compliance, the Chula Vista Green Building Standard and the upcoming California Green Building Code. Between these standards, a new or substantially remodeled structure will combine an energy efficient building envelope, building systems, water conservation, increased comfort and cost savings as well as a much healthier indoor environment and provide measure implementation timelines and guidelines for all aspects of the outreach and education program. Information dissemination should be through the City's Building and Planning Departments many outreach resources such as their "Sustainability Website," newsletters, seminar series, news releases, brochures and fact sheet stations as well as other marketing approaches and media. A carbon calculator is another way to encourage those not building or retrofitting to start thinking about reducing their footprint. Green Awareness will be spread through training City staff and builders on the requirements of the California Green Building Code. All new buildings in Chula Vista shall include a Green Awareness section in the Homeowner or Maintenance and Operations Manual. This would contain an overview of the energy and cost saving features as well as factoids such as that a Plasma screen television uses as much electricity as a refrigerator.

#### Policy Guidelines and Regulatory Amendments

In order to implement the Building Carbon Reduction Benchmark Program, several policy documents and development regulations will need to be modified to reflect new green building standards. This program will likely require amendments to the City's adopted Air Quality Improvement Plan (AQIP) guidelines, Growth Management Ordinance, Design Manual and Guidelines, and the City's Municipal Code. The Green Building Standards Program will also require amendments to the Zoning Ordinance in order to implement any proposed community and/or site and building design standards. LEED-NC (New Construction) and LEED-ND

(Neighborhood Development) will continue to be considered and encouraged as the City amends the Zoning Ordinance and Design Manuals. Although Chula Vista is creating its own Green Building Standards program consistent with the direction of State legislation for building codes, Chula Vista will continue to use and consider (according to General Plan policy) LEED-NC and LEED-ND, as long as they are national standards embraced by the broader architectural and development community. These LEED standards are now included and available through the Urban Core Specific Plan as options and are coupled with development incentives.

All proposed regulatory amendments will be vetted through a public process that will encourage community and stakeholder input. Following adoption of these proposed changes to the City's policy guidelines and development regulations, staff will evaluate and implement a process to align the Green Building Standards program and the Zoning Ordinance and Design Manual modifications with the California Environmental Quality Act (CEQA) environmental review process.

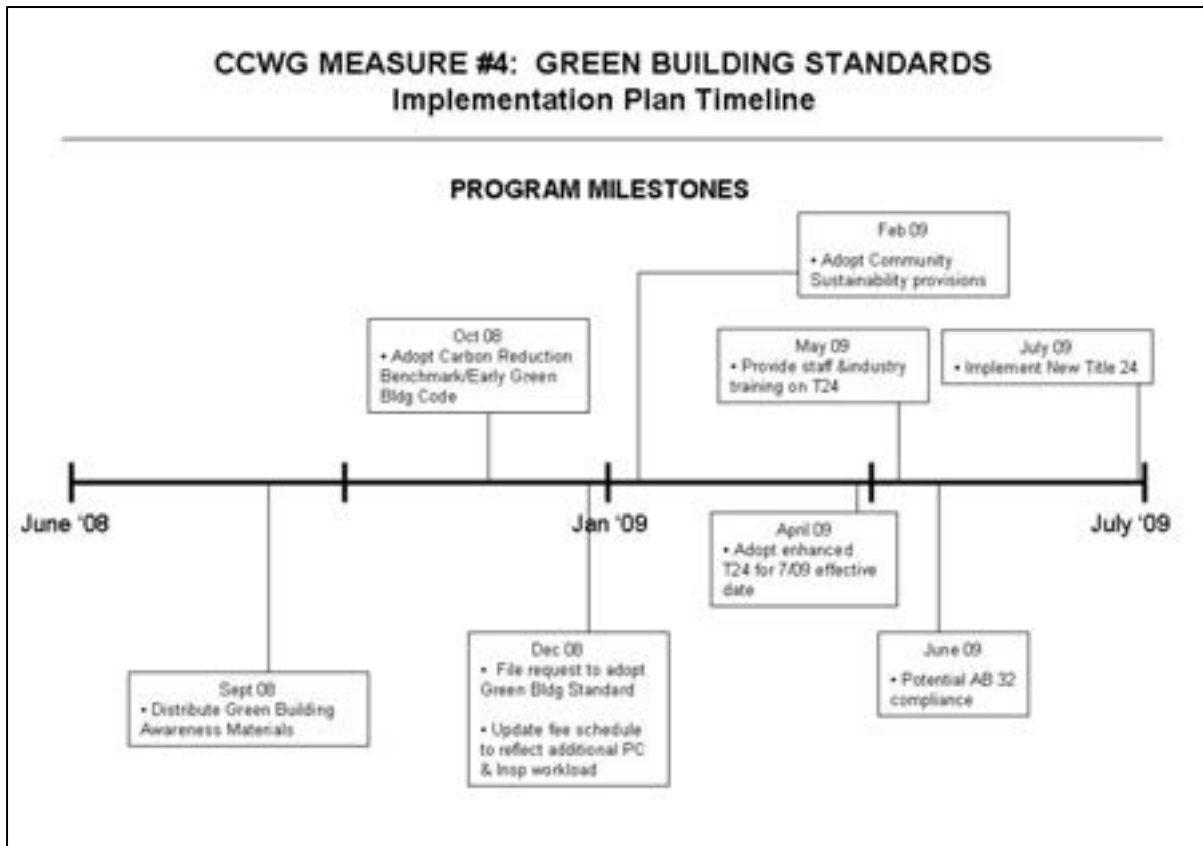
### **PERFORMANCE METRICS**

The implementation of this measure requires an addition to the City's municipal code outlining the new green building standard. Performance would be gauged by the sum of carbon savings of each permit granted and building built in comparison to the anticipated savings achieved through compliance with the minimum requirements of the applicable version of Title 24.

### **TIMELINE**

The program's implementation timeline is graphically summarized below. The CGBC is currently in a 15-day comment period, but once it is approved, the Chula Vista City Council could also approve the code. The implementation of the Chula Vista Green Building Standards could occur as soon as municipal codes are amended and adequate notice is given to the public. The fact that the implementation and enforcement process for building new structures is already in place shortens the recommendation's implementation. Findings of Fact would need to be filed with the BSC. Authoring and creation of fliers (builder, homeowner, building operator and carbon reduction checklist) could be done by staff or outsourced, depending on capabilities and time. In addition, Planning and Building Department staff will need to be trained on CGBC, the Chula Vista Carbon Reduction Checklist, 2008 Title 24 code changes and ASHRAE 62.2.





**BUDGET & FINANCING**

Cost for carrying out the four main implementation components vary by component and are outlined below. Final costs and budget implications will need to be determined and presented as the various program components are finalized and returned for Council action.

*Building Carbon Reduction Benchmark Program-*

The Building Carbon Reduction Benchmark Program does not require additional field inspections by Chula Vista inspectors so additional staff should not be necessary. Inspection criteria and documentation, however, will expand requiring more time per project. Information dissemination can occur in printed form at the permit counter, vendor and material outlets, and professional meetings. Information can also be distributed on the City website.

*Early Green Building Code Adoption-*

Staff will be working with our consultant, ConSol, to identify associated costs and will return those to Council when available.

*Green Awareness Program-*

Staffing at 15% of a Building Inspector III: \$22,500 annually  
 Outreach and awareness publications: \$15,000 annually

The City currently has a grant application in under the 2009-11 SDG&E Partnership Program funding cycle to cover these costs, and should hear back by July 2008 if we are successful.

*Policy Guidelines and Regulatory Amendments-*

The Planning Division staffing cost estimate for implementation of the “Policy Guidelines and Regulatory Amendments” is approximately \$75,000. An additional \$2,500 will be needed for publications of revised documents, bringing the total one time budget cost to \$77,500.

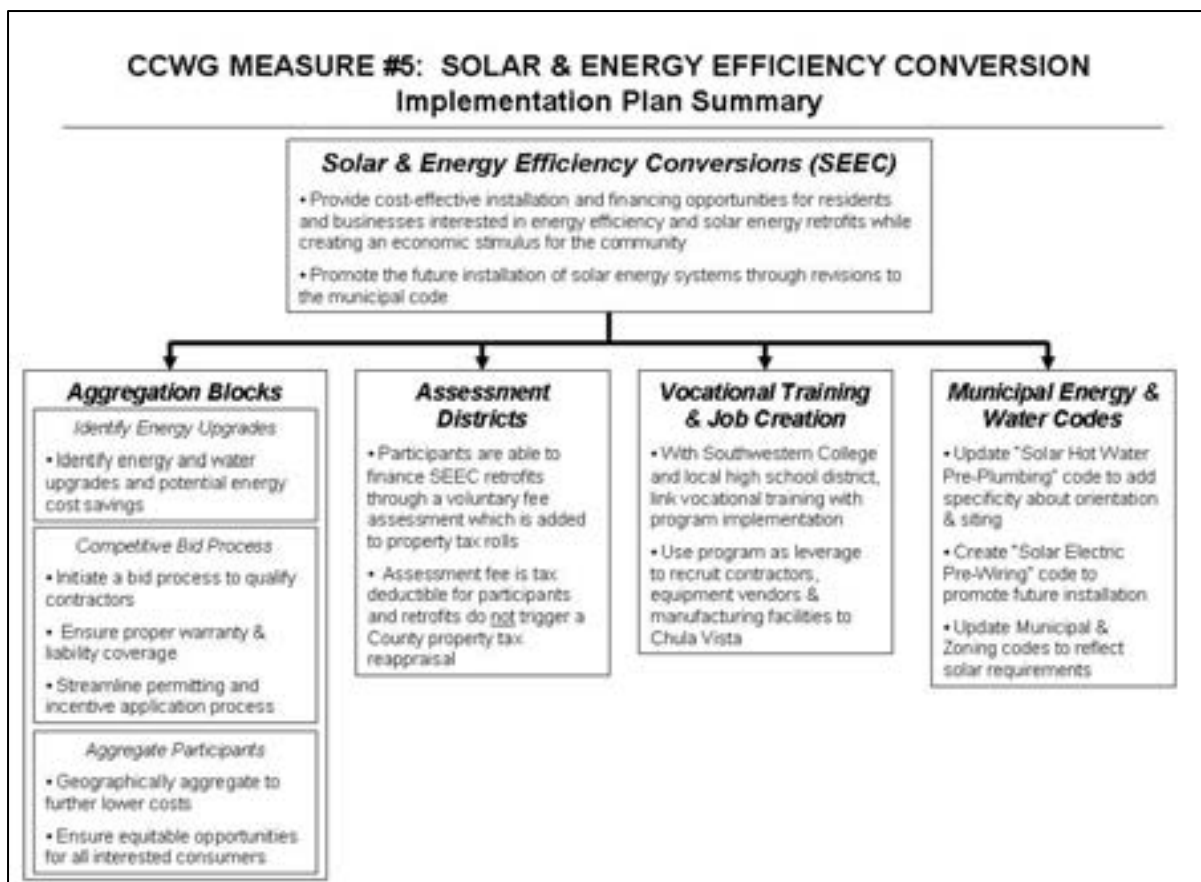
**CCWG #4 - Green Building Standards - Budget**

	<b>Item</b>	<b>One-Time Costs</b>	<b>Annual Cost</b>
Carbon Reduction Benchmark Program	City Staff	\$15,000	\$280,000
	Consulting Services	\$25,000	\$20,000
	Marketing	\$20,000	\$5,000
	Other Commodities	\$15,000	\$4,000
	TOTAL	\$75,000	\$309,000
Early Green Building Code Adoption	City Staff	\$15,000	\$280,000
	Other Commodities	\$15,000	\$5,000
	TOTAL	\$30,000	\$285,000
Green Awareness Program	City Staff	\$22,500	\$22,500
	Marketing	\$20,000	\$15,000
	Other Commodities	\$10,000	\$5,000
	TOTAL	\$52,500	\$42,500
Policy Guidelines & Regulatory Amendments	City Staff	\$75,000	\$10,000
	Other Commodities	\$2,500	\$1,000
	TOTAL	\$77,500	\$11,000
<b>TOTAL</b>		<b>\$235,000</b>	<b>\$647,500</b>

## MEASURE #5: SOLAR & ENERGY EFFICIENCY CONVERSION

### OVERVIEW

The City of Chula Vista Climate Change Working Group’s (CCWG) recommendation #5 urges the City to facilitate widespread installation of solar photovoltaic (PV) systems, thermal solar (hot water) and other non fossil fuel-based renewable energy options on commercial, residential and municipal facilities by developing and implementing a renewable energy conversion program. As proposed, the “Solar & Energy Efficiency Conversion” (SEEC) program is intended to help the average residential and commercial consumer overcome institutional barriers, upfront capital costs and time constraints to installing renewable energy, water conservation and energy efficiency upgrades. The program provides participants a cost-effective, less time-consuming installation and financing option for upgrading their homes and facilities, while creating a sustainable economic stimulus and job creation program for Chula Vista. The program’s primary components include (1) Identifying the energy and water upgrades that help reduce ratepayers monthly costs, (2) Executing a competitive bid process that identifies participating contractors and establishes maximum prices and minimum warranty and service standards, (3) aggregating participants geographically to harness their collective purchasing authority and maximize the potential for installation efficiency and savings, (4) Establishing voluntary special assessment districts to provide participants with a financing option to fund their improvements, (5) Linking local vocational job training in energy and water conservation with focused business recruitment and (6) Updating municipal codes to encourage renewable energy and conservation product installations and to remove institutional barriers. The proposed program is graphically summarized below:



## **IMPLEMENTATION**

The Department of Conservation & Environmental Services (CES) will administer the SEEC Aggregation Blocks, Assessment Districts and Vocational Training/Job Creation components with support from the Finance Department, Office of Budget & Analysis and Office of Economic Development. CES will also work with Planning & Building Department to update Title 20 Energy Conservation and Title 9.7 Water Conservation as well as related sections of the City's Municipal Code. The implementation process for each component is outlined below:

### Aggregation Blocks

The proposed program will geographically aggregate home and business owners who voluntarily choose to retrofit their homes and businesses with energy and water efficiency upgrades and/or install solar photovoltaic (electric) and solar hot water systems. By combining energy and water efficiency upgrade options with solar panel installation, the consumer will be presented with options that minimize their total project cost, maximize their monthly savings and emphasize a balance of greenhouse gas (GHG) reductions and lifestyle choices (Appendix G). Aggregating block areas will also allow staff to naturally phase the program into the community on a block-by-block basis and to adaptively manage its implementation.

CES will implement an open and competitive bid process to identify contractors, who understand the required local installation standards and are committed to assisting staff market the energy/water efficiency upgrades and renewable energy systems to interested property owners. Although the contract for installation work will be between the property owner and the City-qualified contractor, the City will be able to add additional value to consumers by negotiating a lower cost for equipment and installation, establishing minimum installation warranty, service and liability standards, streamlining the contract, rebate application and permit process and saving consumers the time associated with researching, analyzing and executing these phases of their projects. Staff will work closely with the City Attorney's Office in establishing the specialized contractor bid process or similar approach and staff anticipates that participating contractors will be qualified through a 3<sup>rd</sup> party program such as the California Center for Sustainable Energy, California Energy Commission, US Department of Energy and US Environmental Protection Agency.

Initially, participating contractors would be assigned to a limited geographic area. Contractors, who demonstrate high levels of service quality, customer outreach and warranty support and successfully meet the performance standards outlined in the competitive bid process, will be permitted to expand into other geographic areas. Staff hopes to ensure that all geographic and socio-economic sectors of the City receive equitable access to the program. The City will also use aggregation to provide an incentive to ensure that equipment, materials and supplies are purchased from a Chula Vista business that provides comprehensive warranty and service for their supplies and equipment. Additionally, the City will use the competitive bid process to help connect employers with the local vocational education program to foster growth in a new sector of "clean technology" jobs and further reduce the program's carbon footprint by facilitating the use of local labor.

### Assessment Districts

The City will offer participating property owners the option of financing the energy and water efficiency and renewable energy upgrades through a voluntary fee assessment. Participating

property owners would add the costs of investing in energy and water improvements to their property's tax roll (see Budget & Financing section for discussion of general bond issuance). These costs will be paid back over time through semi-annual tax payments and can be structured to be offset by the energy and water savings generated by the improvements chosen by the participant. This process is designed to overcome the barrier of upfront costs for installing renewable energy technologies which many industry experts and regulators have identified as a significant barrier to broad renewable energy adoption. Participants would also have the option of participating in the aggregation process and funding the improvements on their own. According to the County Tax Assessor, the energy and water efficiency upgrades and renewable energy installations proposed by the program will not trigger a property tax re-appraisal.

#### Vocational Training & Job Creation

In coordination with Southwestern College and the local high school district, staff will link vocational training opportunities with the program's implementation. Specifically, contractors qualified by the City to perform energy efficient upgrades and solar energy installations (as part of the SEEC Aggregation Blocks) will be encouraged to hire new employees from the vocational education program as the program matures and produces qualified graduates. Staff will work with the vocational education program, local contractors and local suppliers to establish incentives in the bid and marketing assignment process to establish incentives for local hiring.

Staff will use the SEEC program as an economic stimulus and business recruitment tool for Chula Vista. As previously mentioned, contractors qualified by the City to perform installations will be required to purchase related program materials and equipment through a Chula Vista-licensed business. Staff will use the SEEC program as leverage to recruit solar and energy efficient equipment installers, distributors and manufacturers to establish a "clean technology" business division within Chula Vista. In addition to generating employment opportunities and sales tax revenues, the new business's proximity could lower overall equipment, installation and transportation costs and GHG impacts for SEEC program participants. Once the size of the Chula Vista and regional market potential is established, staff will re-contact renewable energy and water energy product manufacturers and suppliers about establishing manufacturing and assembly plants within the Chula Vista and south San Diego County area.

#### Municipal Energy and Water Conservation Codes

Chula Vista's Municipal Code (20.04.030) requires that "all new residential units shall include plumbing specifically designed to allow the later installation of a system which utilizes solar energy as the primary means of heating domestic potable water" (Appendix H). To maximize the effectiveness of the "Solar Hot Water Pre-plumbing Standard," staff will update the code to include additional language about site orientation and solar access. Staff may also need to make revisions to the City's Zoning Ordinance, accordingly. To expand opportunities for the cost-effective installation of solar energy systems in the future, City staff will also develop an amendment to the Municipal Code's Title 20 "Energy Conservation" section in order to require pre-wiring for solar photovoltaic systems in new and remodeled residential units. The code amendment will include specific guidance about site orientation and solar access. In addition, the code will complement sections of the Municipal Building and Zoning Code being updated as part of CCWG Measure #4 (Green Building Standard) which will likely address passive solar building design, new solar photovoltaic installation, energy efficiency and green building standards being promulgated by state and local agencies.

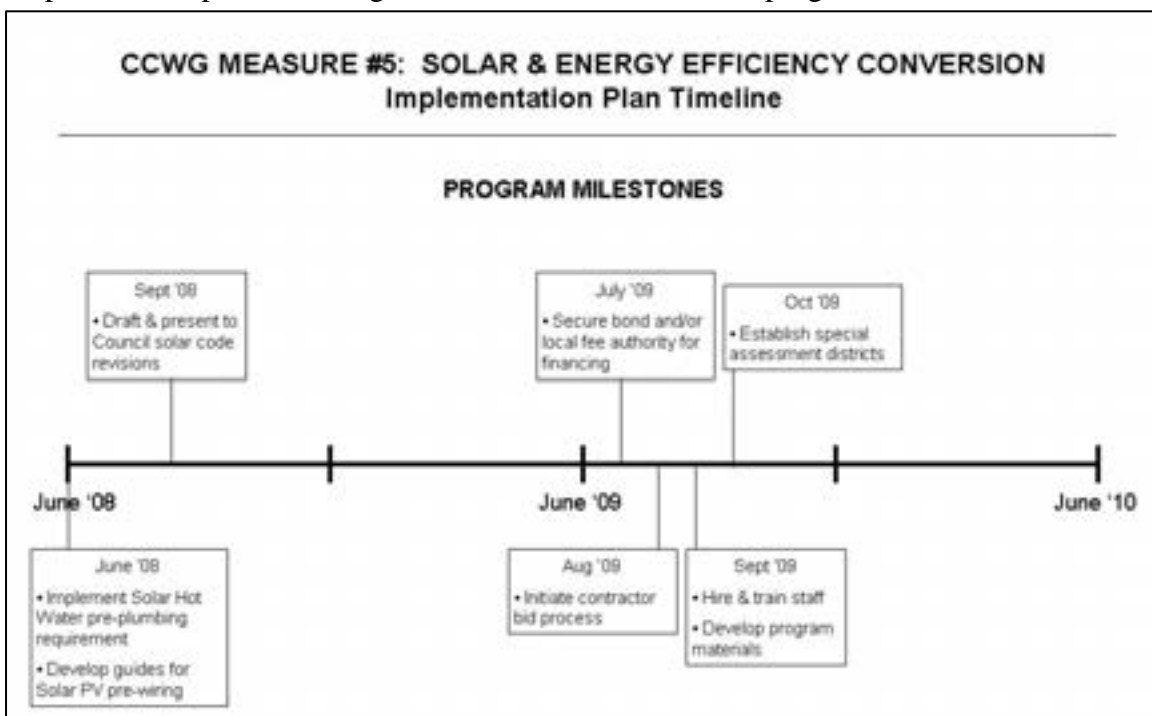
## PERFORMANCE METRICS

The results of this program will be tracked on a project-by-project basis and summarized to identify its “net” impact on the City’s GHG emissions reduction goal. Specifically, the Solar & Energy Efficiency Conversion program’s performance will be measured by a suite of metrics including the number of energy efficiency improvements, participating homes/businesses, solar systems installed, renewable generation kilowatts installed and the corresponding kWh/Therm savings. Staff will also work with San Diego Gas & Electric (SDG&E) and the California Center for Sustainable Energy to quantify the number and amount of incentive funds solicited as a result of the program.

In the current greenhouse gas inventory protocol, the community’s carbon emissions are directly extrapolated from citywide energy use, which is provided in an aggregated format by SDG&E. Because the SEEC program will improve energy efficiency and/or replace grid-source energy with on-site renewable energy, it will lead to overall energy use reductions in existing individual homes and businesses that participate in the program. Because the program is voluntary and incentive driven, its final impact on citywide “net” GHG emission reductions will depend on the level of community participation and the effectiveness of other CCWG Measures (such as the Green Building Standard) to ensure that future growth is carbon neutral.

## TIMELINE

Prior to enrolling interested property owners into the program, components #1 (Aggregation Blocks) and #2 (Assessment Districts) would first require establishment of financing mechanisms and a contractor bid process which is estimated to occur in summer 2009. Component #3 (Vocational Training) would be integrated as the program is launched and implemented. Local educators have estimated that it would take 2-3 years to establish a curriculum and matriculate the first class of qualified energy efficiency/solar apprentices. Finally, refining the current solar hot water standard and creating a solar electric pre-wiring code (component #4) would take approximately 3-6 months and would require the necessary public notice periods and public readings before Council action. The program’s timeline is below:



## BUDGET & FINANCING

The SEEC program’s implementation cost (exclusive of energy efficiency and solar energy equipment and installation) is estimated to be \$347,800 per year in staffing, supplies and services. An additional \$75,000 may also be needed initially to provide resources to update and create the aforementioned energy-related municipal codes. This program cost assumes full funding of all seven CCWG measures and will leverage each measure’s budget to provide partial cost sharing of staff time and program materials. For example, staff enrolling homes and businesses in the Solar & Energy Efficiency Conversion program will also promote the Turf Lawn Conversion (CCWG Measure #7) program to property owners leading to lower implementation costs for each program and increased program participation. A portion of each measure’s budget will also partially cover overall administrative and performance tracking costs associated with the City’s climate protection efforts. The program’s budget is outlined below:

### CCWG #5 - Solar & Energy Efficiency Conversion Program - Budget

		Item	One-Time Cost	Annual Cost
SEEC Aggregation Blocks, Assessment Districts & Vocational Training*	City Staff		-----	\$219,000
	Interns		-----	\$49,000
	Marketing		-----	\$50,000
	Other Commodities**		-----	\$29,800
		TOTAL		-----
Municipal Energy Codes	City Staff		\$70,000	-----
	Other Commodities		\$5,000	-----
		TOTAL	\$75,000	-----
		<b>TOTAL</b>	<b>\$75,000</b>	<b>\$347,800</b>

\*Assumes cost sharing between CCWG Measures #3, 5 & 7 for staff time & program materials

\*\*Budget does not include capital costs for solar & energy efficiency improvements (dependent on participation levels)

To fund the program, staff is recommending that a combination of bond and local “fee authority” funding be pursued. The bond would be used to cover the initial capital costs associated with energy efficiency and solar retrofits for public/private facilities and will allow this measure to establish an economy of scale that can maximize the benefits of aggregated and competitive purchasing to reduce consumer and City costs. A fee authority would provide long-term, sustainable funding for the program to supplement the initial bond authority and provide a complementary revenue source to fund a portion of the costs for transitioning to on-site renewable energy at City facilities. Both funding mechanisms will also be complemented by local, state and federal rebates, tax incentives and credits. In addition, carbon emissions

mitigation or offset fees being developed through CCWG Measure #4 (Green Building Standard) could be applied to the SEEC program to subsidize energy efficiency and renewable energy upgrades at municipal facilities or within existing building stock preferably targeting lower income families and service institutions (such as low income housing, shelters etc.)



## **MEASURE #6: SMART GROWTH AROUND TROLLEY STATIONS**

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### **OVERVIEW**

The City of Chula Vista Climate Change Working Group's (CCWG) recommendation #6 states that the City should "facilitate 'smart growth' around the H St., E St. and Palomar St. trolley stations." This recommendation embodies the fact that smart growth is typified by a compact, efficient and environmentally sensitive pattern of development that provides housing, employment, service uses and public facilities in a mixed-use format close to transit and other modes of alternate transportation. This improves and promotes the ability to conveniently access uses by walking and/or transit, thereby reducing automobile use and the associated burning of fossil fuels that contribute to greenhouse gas production. Transportation emissions represent approximately 48% of the Chula Vista community's carbon footprint, whereby reduction in Vehicle Miles Traveled (VMT) through promoting pedestrian and transit friendly smart growth environments, can have a meaningful effect on carbon emissions.

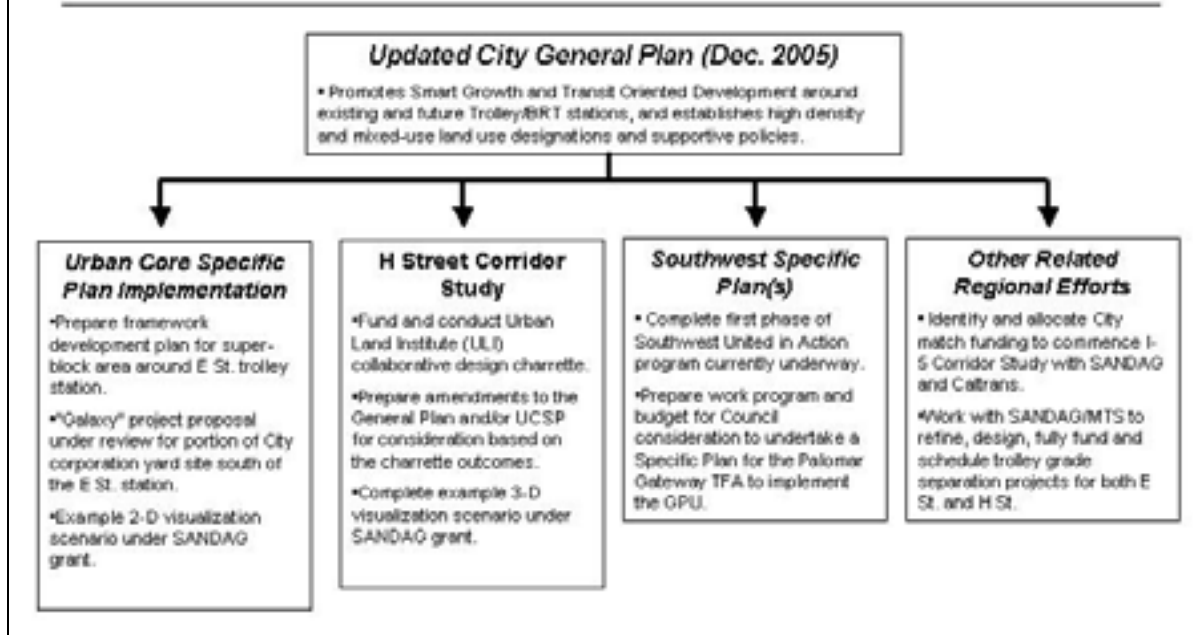
The staff agenda report which accompanied the Climate Change Working Group's recommendations also noted that Recommendation #6 would not require much further implementation action because mixed-use, transit-oriented land use designations, policy and zoning has already been incorporated into City planning documents for the subject areas; namely the updated General Plan (GP) and the Urban Core Specific Plan (UCSP). While those plans have been adopted, there are several work efforts necessary in order to move from those plans to facilitate the envisioned smart growth development with the E, H and Palomar St. Transit Focus Areas (TFAs). The four areas of work presented in this implementation plan include (1) implementation of the UCSP through preparation of a framework plan for redevelopment of the area around the E St. station, (2) completion of the H St. Corridor Study called for in the General Plan to address more detailed land use and transportation planning provisions along H St. from the trolley station east to Third Ave., (3) preparation of Specific Plans within the Southwest area, and (4) other related regional efforts to prepare design studies for needed improvements along the I-5 corridor to serve the sites.

As described further in this document, some aspects of these four efforts are included in the current Work Programs of the involved Departments, while others will require further work program and budget authorizations by Council.

### **IMPLEMENTATION**

The Planning and Building Department will primarily administer the City's Smart Growth planning and zoning efforts outlined below but will need to work, and is already working, in partnership with the City's Redevelopment Agency and Housing Authority, Engineering Department and others to develop and implement related plans, programs and projects. The implementation process for each component is outlined below:

**CCWG MEASURE #6: SMART GROWTH AT TROLLEY STATIONS  
Implementation Plan Summary**



1. Urban Core Specific Plan Implementation

**E Street Transit Focus Area / Galaxy ENA** - The adopted General Plan identifies the area surrounding the E St. trolley station as the E St. Transit Focus Area and calls for high intensity mixed use development within the superblock between I-5, F St., Woodlawn Ave. and E St. The area was subsequently zoned as part of the UCSP’s UC-15 District. While much of the land area is owned by the City and MTS as part of the City’s old corporation yard and trolley station site respectively, there are several other privately held parcels. Successful redevelopment as a high intensity TFA will require joint coordination and planning for matters such as infrastructure, circulation, site design, building massing, and parking.

The Chula Vista Redevelopment Corporation is currently under a 120-day Exclusive Negotiating Agreement with Galaxy Commercial Holding, LLC to explore a transit-oriented development project on the City’s former corporation yard (“Corp Yard”) located immediately adjacent to the E Street Trolley Station. A premise of the ENA and development of the Corp Yard site is that they will create momentum and market confidence for private investment in the rest of the E Street Visitor Transit Focus Area (“TFA”). The ENA requires a Comprehensive Site Design Study to consider such factors as the City’s adopted land use plans and policies, adjacent land ownerships and property interests in the subdistrict, parcel configurations, circulation and traffic patterns, environmental factors, plans for regional transportation facilities, Bayfront planning and redevelopment activities, and public input. The Study will also include proposed Floor Area Ratio (“FAR”) distributions, phasing strategies and pedestrian and vehicular circulation patterns on the Property and surrounding properties within the UC-15 Subdistrict, along with site plans

depicting Developer's proposed development scenarios. Staff is currently working with Galaxy on the Study and their project development proposals which are due between now and mid-July 2008 when the current ENA period expires. Based on progress of the work, the Agency will then need to consider whether to extend the ENA.

**2-D Visual Simulations of E Street TFA** - As part of SANDAG's Smart Growth Implementation program, the City has recently received grants for the preparation of computer visual simulation models for both the E Street TFA and the H Street Corridor. Under the grants, SANDAG's consultant Urban Advantage will prepare a computer generated visual simulation of urban redevelopment of the E St. TFA. From a chosen vantage point at E St and Woodlawn Ave., the computer simulation will depict photo-realistic phased development intensification of the area consistent with the GP and UCSP visions. The simulation will assist staff in working with the public and decision makers to better envision and understand how urban redevelopment of the site may look, particularly from the standpoint of building massing and building heights.

Initial work by the consultant Urban Advantage has been completed, and staff is currently reviewing a draft of the modeling work. A final product will be available by July 2008.

## 2. H Street Corridor Study

**Urban Land Institute Program** - The December 2005 General Plan designates the H St. corridor between the H St. trolley station and Third Ave. as a Study Area. H St. serves as the major commercial and office corridor connecting the Bayfront and the H Street TFA with the downtown Third Avenue area. Considering the large property ownerships and potential for expansions and redevelopment involving the South County Court House, Scripps Hospital, Chula Vista Center, and a new hotel/convention center on the Bay Front, H Street provides great opportunity for revitalization. While the General Plan and UCSP provided a framework, they did not provide a cohesive road map to physically and economically proceed with actual redevelopment including land assembly, parcel configuration, environmental factors, floor area ratio (FAR) distributions, circulation and traffic patterns, and plans for regional transportation facilities.

In order to move development efforts forward, the Redevelopment Agency is currently pursuing sponsorship of an Urban Land Institute's (ULI) panel that will bring planning and real estate experts to Chula Vista to conduct a five-day Advisory Services Program. The Program will use a public charrette-type process to identify and address relevant issues/challenges, and provide an implementation strategy for the revitalization of the Corridor. From staff's perspective, the process will play a key role in working to bring the community together on a workable vision for pursuing projects within the Corridor. Staff will be coming forward to the Agency on July 22, 2008 to appropriate \$120,000 to fund the ULI program. If approved, the ULI program is currently anticipated to take place the week of October 12 – 17, 2008.

**Potential General Plan and/or UCSP amendments** - Dependent upon the outcomes of the ULI program, it may be necessary to undertake revisions to the General Plan and/or UCSP to effect land use and regulatory changes to support desired redevelopment. Following the October session, staff would need approximately 45 days to develop a work program for any

potential GP and/or UCSP amendments, and could return to Council in January 2009 to present that. Dependent upon the nature and extent of the potential amendments, it could take 6 to 9 months or more to complete them, with staff returning for Planning Commission and Council public hearing consideration of amendments beginning no sooner than Fall 2009.

**3-D Visual Simulations of H Street Corridor** - As noted above, the City also received a SANDAG grant for consultant Urban Advantage to prepare a photo-realistic visual simulation of a redeveloped H Street corridor. Staff currently intends to tie the visualization work to completion of the ULI effort, whereby the SANDAG modeling efforts would incorporate land use and building form outputs from the ULI charrette, and provide 3-D visual imaging of the potential redevelopment of the Corridor to enhance public understanding and build support for subsequent planning and project work. Staff has already begun work with SANDAG's consultant with regard to their scanning and input of base information of existing conditions. Completion of the modeling would take place during November and December 2008.

### 3. Preparation of Southwest Specific Plan(s)

With regard to the Palomar Gateway TFA, the General Plan calls for the preparation of a Specific Plan or other comprehensive zoning and design tool to carry out urban revitalization and redevelopment within the TFA which includes the Palomar trolley station and surrounding areas. The General Plan also identified the need for Specific Plans in several additional locations within the Southwest Planning Area. While current Planning and Building Department work programs generally identify the need for these Plans, there is not available staffing, consulting and budget resources available to prepare them. The shaping of those work programs and budgets will also depend on whether one overall Southwest Specific Plan is undertaken, or as staff currently envisions, the preparation of individual, smaller Specific Plans focused on particular areas such as the Palomar TFA.

**Southwest United in Action program priority setting** - Prior to proceeding with further detail work program and budget planning for Specific Plans, staff is currently engaged in completing the first phases of the Southwest United in Action (SUA) program to gauge the range of community issues, and related community priorities. Initial community inputs on issues were solicited at a Community Convention on March 15, 2008, and staff will be holding a second Community Convention on June 21, 2008, to solicit input on action items that are most important to the community, including preparation of Specific Plans. Staff will subsequently return to Council by fall 2008 to present community priority inputs.

**Palomar Gateway TFA Specific Plan** - Should the community identify a priority for preparation of this Specific Plan through the above SUA work, and upon subsequent direction from the City Council, staff will prepare a work program and budget for a Palomar Gateway TFA Specific Plan for review and consideration by Council. Some work towards a Specific Plan for this area (entitled the Palomar Gateway Conceptual Design Study) was prepared during the General Plan Update, and could be used to jump start the effort. If Plan preparation is identified as a community priority, and supported by Council, it would take approximately 60 days for staff to return with a work program and budget proposal. Assuming Council considers and provides direction on community priorities by the end of

2008, staff could return the work program for consideration by March 2009 as part of the FY09-10 budget proposals. If approved, preparation of a Specific Plan would take approximately 12-18 months and could commence after July 2009.

#### 4. Other Related Regional Efforts

There are also two major regional efforts that must be undertaken and completed in order to ultimately develop and build out the smart growth land use plans and intensities for the trolley station areas, particularly those at E St. and H St. These include undertaking the I-5 Corridor Study with SANDAG, and securing a funding program for the grade separation of the trolley crossings at E and H Streets.

**I-5 Corridor Study** - This Corridor Study is a needed prerequisite in the planning and design of future transportation improvements along the I-5 corridor necessary to ultimately serve development in western Chula Vista and the Bayfront. The improvements would encompass highway travel lanes, HOV and transit, as well as reconfiguration of ramping, the bridge decks, and grade separation of the trolley crossing at E and H Streets. Considerations for one component affect the rest, and the Corridor Study serves as a mechanism to review and address the interrelationships prior to proceeding with the next phases of design.

Staff began meeting almost two years ago with SANDAG regarding the scoping, cost and timing for the work, and has since developed a work program and budget with SANDAG and Caltrans. The Study has a matching component for Chula Vista. Staff has been working with Congressman Filner's office over the last year to see through legislation that was approved on June 6, 2008, that redesignated approximately \$2 million in federal SAFETEA-LU funds to cover our matching component. SANDAG, Caltrans and City staff will now be refining the scope of work. The Corridor Study project was defined as a project in the Western CV TDIF program approved by Council in March 2008. The 24-month Study will commence in FY08-09, with completion anticipated by FY 2010-11.

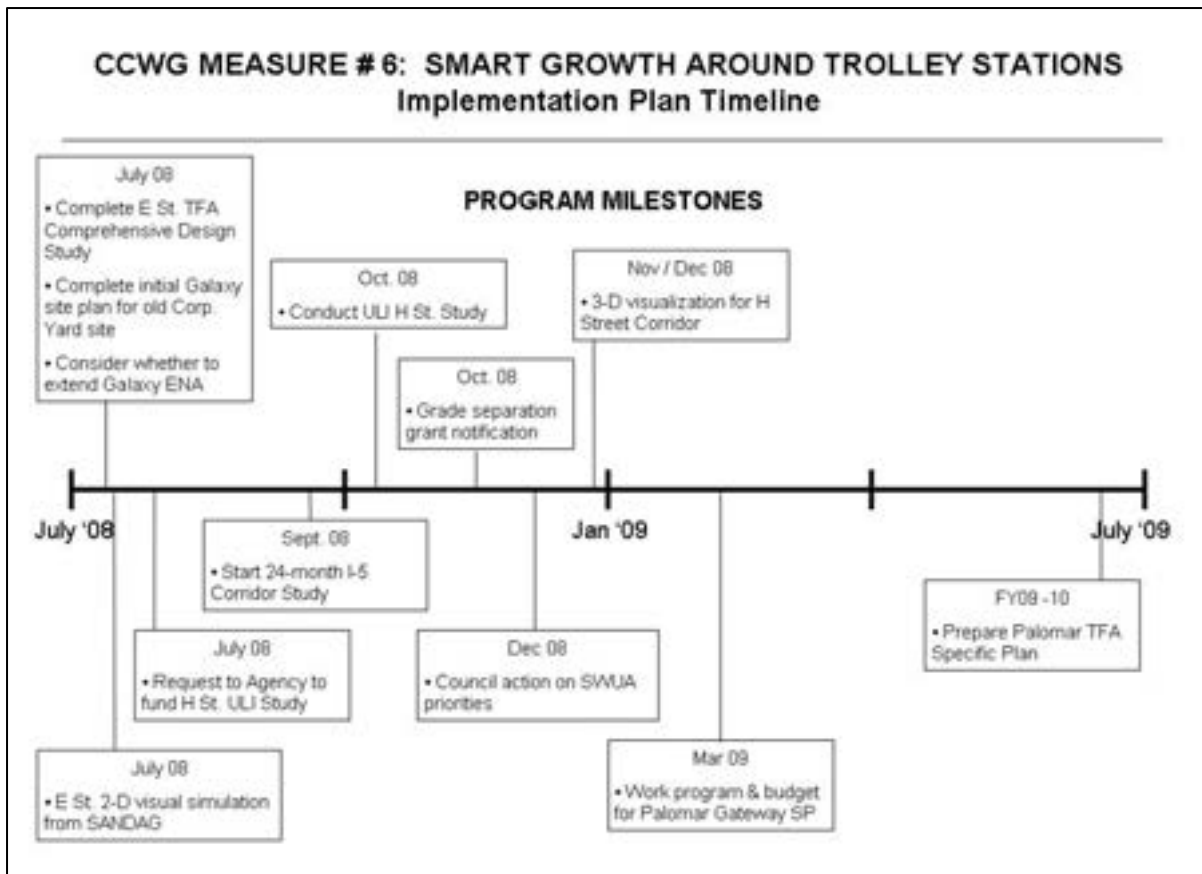
**Trolley Grade Separation funding** - Grade separation of the trolley crossings at both E St. and H St. will be needed to accommodate urban development intensification in western Chula Vista by allowing traffic to access and cross I-5 absent the current impediment of the trolley gates. This also affects the design for redevelopment at both of these TFAs. Costs for the separations are estimated at \$36 million for H St. and \$40 million for E St. SANDAG has identified funding for approximately 50% of the costs, while 28% of the costs are identified as ultimately being funded through the WCV TDIF approved by Council in March 2008. Staff is currently working with SANDAG to make grant applications to the State for additional funding, and requires a letter of approval from the Mayor to make the application that is due by June 19, 2008. Notification of any grant awards is anticipated in Sept./Oct. 2008, and staff will report back to Council at that time. In the event that sufficient grant monies are not received, staff will need to work with the Council to identify and pursue other sources.

## PERFORMANCE METRICS

Given that the items under this Implementation Measure involve proposed planning and project efforts, the performance metrics would be completion of each of the above identified planning and study components.

## TIMELINE

Following is an overview of milestones associated with each implementation component pursuant to the prior discussions and reflected in the accompanying timeline graphic:



Implementation component #1 - the E St. TFA Framework Plan is due to the City from Galaxy by mid-July 2008 per the current ENA. This includes their development of an initial site plan for development of the City's prior corporation yard site. If more time is needed or desired, the Agency would need to extend the ENA. The 2-D visual simulation work with SANDAG will be completed by July 2008.

Implementation component #2 - The request for Agency funding of the ULI Study will be brought forward on July 22, 2008. If approved, the ULI activities would be conducted during the week of October 12-17, 2008. Based on outcomes of the ULI efforts, any desired General Plan and/or UCSP amendments would take a minimum of approximately 6 to 9 months to complete, with the earliest hearings starting in fall 2009. Per agreements with

SANDAG, the 3-D visual simulations would follow the ULI work, and be completed by December 2008.

Implementation component #3 - If identified as a community priority through the SUA work by August 2008, the earliest a work program and budget for a Palomar Gateway Specific Plan could be returned for Council consideration would be November 2008. If authorized, preparation of the Specific Plan would take 12 to 18 months. Assuming a January 2009 start, the earliest time for completion would be spring 2010.

Implementation component #4 - Work program and funding clarifications with SANDAG for the I-5 Corridor Study are anticipated over the next 2 months, with the Study getting underway in FY2008-09. The 24-month Study would be anticipated for completion some time in FY2010-11. State grant applications for trolley grade separation funding are due June 19. Notification on grant awards is currently scheduled for Sept./Oct. 2008.

## **BUDGET**

Costs associated with carrying out implementation are comprised of several components, some of which are funded and budgeted, and others which will require future budget and funding considerations as follows:

### Implementation component #1

- Galaxy Framework Plan and Corp Yard Site Plan; privately funded.
- 2-D Visual Simulation; SANDAG consultant services (grant)

### Implementation component #2

- ULI Program; \$120,000 funding to be requested from Redevelopment Agency.
- Potential General Plan or USCP amendments; costs unknown pending outcome of ULI program. Partial Redevelopment Funding possible, otherwise will be General Fund request.
- 3-D Visual Simulation; SANDAG consultant services (grant)

### Implementation component #3

- Southwest United in Action program; approved Redevelopment Agency funding.
- Palomar Gateway Specific Plan; estimated \$250,000 for planning, \$250,000 for EIR to be sought at a future date when work program and budget presented. Partial Redevelopment Agency funding possible, otherwise will be General Fund request. State law allows for reimbursement district to be formed encompassing parcels within the Specific Plan. Some grant funds may be possible, but have not yet been identified.

### Implementation component #4

- I-5 Corridor Study; \$1.987 million in federal funding approved June 6, 2008. Balance of costs by SANDAG.
- Trolley grade separations; City WCV TDIF to pay 28% of costs currently estimated at \$18.344 million for both E and H St. Should cost estimates rise, adjustments to the WCV TDIF would be necessary. SANDAG to pay 50% of project costs. Balance of funds currently being sought via State grants.

**CCWG #6 - Smart Growth Around Trolley Stations - Budget\***

	Item	One-Time Cost	Annual Cost
UCSP Implementation	E Street	-----	-----
	TOTAL	-----	-----
H Street Corridor Study	ULI Program	\$120,000	-----
	GP/UCSP Amendments	-----	-----
	Simulation	-----	-----
	TOTAL	\$120,000	-----
Southwest Specific Plans	Palomar Gateway SP	\$250,000	-----
	EIR	\$250,000	-----
	TOTAL	\$500,000	-----
Other Related Regional Efforts**	I-5 Corridor Study	-----	-----
	Trolley Grade Separations	-----	-----
	TOTAL	-----	-----

**TOTAL     \$620,000**

\* These projects' costs are necessary to implement the Council-approved General Plan & Urban Core Specific Plan and would be incurred whether or not the CCWG Implementation Plans are approved

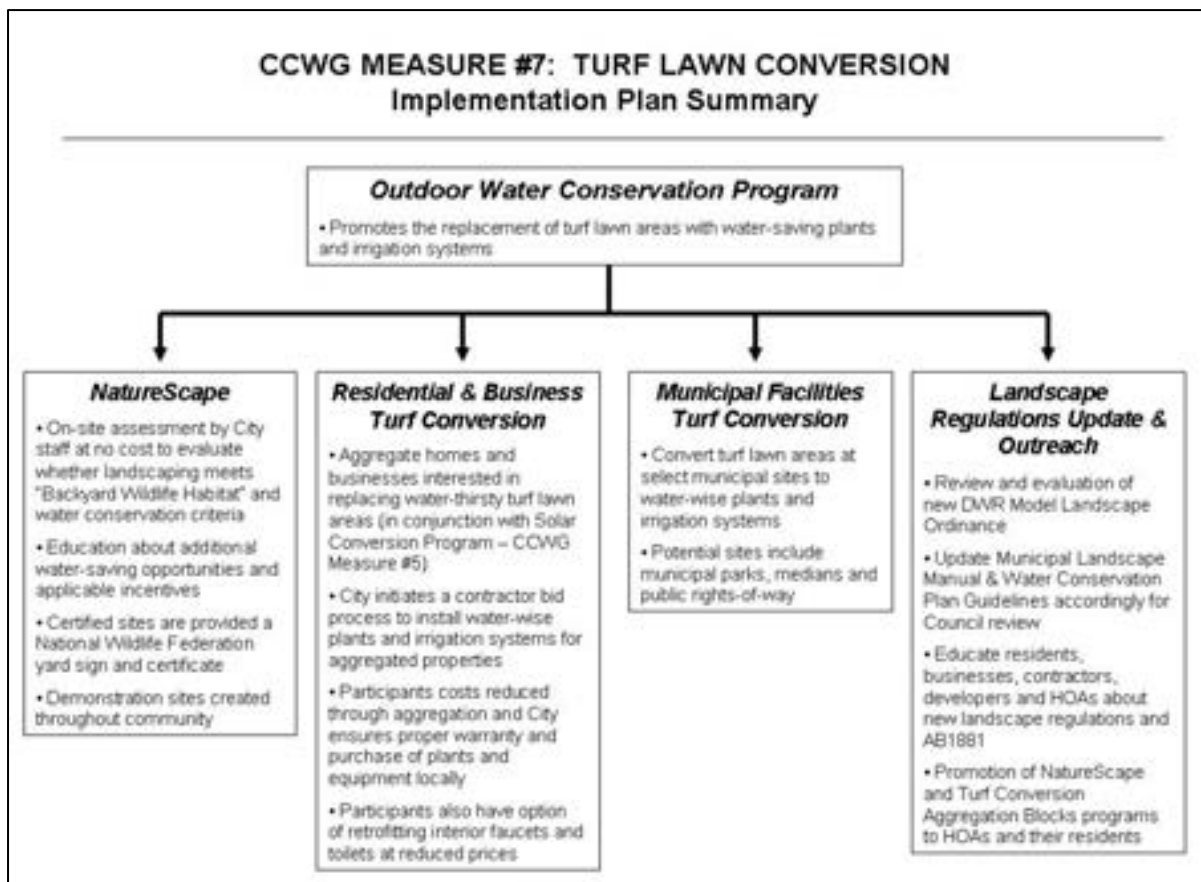
\*\* The City has already secured approximately \$20.3 million for related regional smart growth efforts such as the I-5 Corridor Study and the Trolley Grade Separations (E St. & H St.)



## MEASURE #7: TURF LAWN CONVERSION

### OVERVIEW

The City of Chula Vista Climate Change Working Group’s (CCWG) recommendation #7 states that the City should “coordinate with Otay Water District, San Diego County Water Authority and the Sweetwater Authority on turf lawn conversions for commercial and residential properties.” The measure was intended to help residents and businesses replace turf lawn areas with drought-tolerant plants (commonly referred to as “xeriscape” or “California-Friendly” landscaping). Pumping and treating water throughout California requires large amounts of energy and subsequently is a major contributor to greenhouse gas emissions. The proposed outdoor water conservation program complements the local water districts’ efforts and builds upon the City’s existing NatureScape program. Specifically, the program’s components include (1) continuation and expansion of the NatureScape program to promote water conserving and nature-friendly landscaping, (2) coupling of residential and business turf lawn replacement with the solar conversion aggregation block process (Measure #5), (3) converting select municipal facilities to low water use plantings and irrigation, and (4) updating various municipal landscape regulations and guidelines to comply with new state requirements and further promote outdoor water use efficiency. Components #1 and #2 would be voluntary and would be available to all Chula Vista residents and businesses, while Component #3 would apply only to City properties and rights-of-way. Component #4 would apply to new developments through updated municipal regulations. The proposed outdoor water conservation program is graphically summarized below:



## **IMPLEMENTATION**

The Department of Conservation & Environmental Services will administer the NatureScape and Residential & Business Turf Conversion components, while the Planning & Building Department and Engineering Department will coordinate the update of the City's landscape regulations. In addition, the Engineering Department will coordinate the Municipal Facilities Turf Conversion. All departments will work closely together to implement outreach and marketing efforts to maximize the program's cost effectiveness. The implementation process for each component is outlined below:

### NatureScape Certified Properties

The current NatureScape program works to promote nature-friendly gardening and landscaping throughout the community by educating property owners and "certifying" their properties. Specifically, residents and businesses that voluntarily elect to participate in the program receive, at no cost, an on-site assessment by a City staff member who reviews their landscaping for the presence of food, water and cover for wildlife and the incorporation of water-conserving features such as low water-use plants, mulching and water efficient irrigation. Staff also educates participants about possible water-saving improvements and available incentives and rebates, if applicable. Residential or business properties who successfully meet the program's criteria are certified through the National Wildlife Federation's "Backyard Wildlife Habitat" program and receive an aluminum yard sign and certificate. The current program was developed and is being implemented with the support of Otay Water District, Sweetwater Authority, Chula Vista Garden Club, Bonita Valley Garden Club, UC Master Gardeners and the South Bay YMCA Earth Service Corps.

As part of CCWG Recommendation #7's implementation, the current NatureScape program would be continued and expanded through additional staff and program funding for supplies and services. The new program would reach a broader audience through comprehensive marketing efforts and produce greater water savings (and related energy savings) through increased staff technical support and program participation. The program will also engage the community through creation of water-saving garden and landscape demonstration sites at various community locations. The program would continue to collaborate closely with the local water districts to leverage resources and to increase the program's cost effectiveness adding value for participants. The program's goal is to be the community with the highest number of certified properties in the United States.

### Residential & Business Turf Conversions

Similar to the Solar & Energy Efficiency Conversion program (Measure #5), the proposed program will aggregate existing homes and businesses who are interested in replacing portions of their turf lawn areas with water-saving plant palettes and irrigation systems. Through a competitive bid or negotiation process, a single or multiple contractors will assist City staff in enrolling interested property owners and installing more water-efficient landscaping. By aggregating the participants, the City will be able to negotiate a lower cost (on a per square footage basis) for program participants. Staff will also be able to help reduce participants' costs by streamlining the application process for applicable incentives offered through Otay Water District, Sweetwater Authority, San

Diego County Water Authority and the Metropolitan Water District of Southern California.

The aggregated bid process will allow the City to ensure that the contractor is using appropriate plant material and irrigation equipment purchased from a business located within Chula Vista, providing a comprehensive warranty for their supplies and services and following proper municipal landscape plan approval procedures. To further maximize water use efficiency, participating businesses and homeowners may also elect to have the contractor replace old interior water fixtures and toilets with new water-saving models (see Measure #5). This approach satisfies real estate and developer representatives' request to not use change of property ownership to trigger mandatory retrofits of indoor plumbing fixtures.

#### Municipal Facilities Turf Conversions

The proposed program aims to replace turf lawn areas at select municipal sites with water-saving plants and irrigation systems. In addition to reducing the City's water costs, the re-landscaped areas will further provide a public demonstration of water-conserving landscape design principles and may reduce landscape maintenance costs. Selected municipal sites would be limited to turf lawn areas which are not actively used by the public for recreation and would potentially include certain municipal buildings, park areas, medians and public rights-of-way.

#### Landscape Regulations Update & Outreach

By January 1, 2009 the Department of Water Resources (DWR) will be releasing an updated Model Landscape Ordinance, which outlines statewide water-conserving landscape design criteria. Local governments will be required to adopt the model ordinance or develop a new ordinance that is at least as effective as the statewide model ordinance by January 1, 2010. The ordinance would generally apply to landscaping for all new developments over 2,500 ft<sup>2</sup> in area and to re-landscaping of some existing properties (certain property types are exempt), and would base design thresholds on a maximum water allowance.

Outdoor water use throughout Chula Vista is mainly regulated through the City's Landscape Manual which outlines landscaping and irrigation requirements for all public projects and certain private projects and the Water Conservation Plan Guidelines which outlines water-conserving measures that need to be integrated into Sectional Planning Area (SPA) Plans, Tentative Subdivision Maps and major development projects with at least 50 dwelling units or equivalent water demand. The proposed program would provide funding for City staff to update these existing municipal regulations to meet and potentially exceed the new statewide Model Landscape Ordinance. The updated regulations would strongly emphasize additional outdoor water savings by further minimizing turf lawn areas, using water-wise plant types and installing weather-based and low-water irrigation systems.

The program component will also involve actively educating Chula Vista residents, businesses and developers of the new landscape regulations. Outreach efforts will also help disseminate information about California Assembly Bill (AB) 1881 which made it

unlawful for homeowner associations that run common interest developments to restrict the use of low water-using plants through covenants, conditions and restrictions (CC&Rs) if the plants meet maintenance standards. Although the new law has been enacted, residents continue to face challenges in obtaining approval from HOAs for the installation of low water-use plant palettes and many HOAs remain unaware of the new legislation. Associations will be informed about AB1881 and will also be encouraged to participate in and promote the City's water-saving programs to their residents.

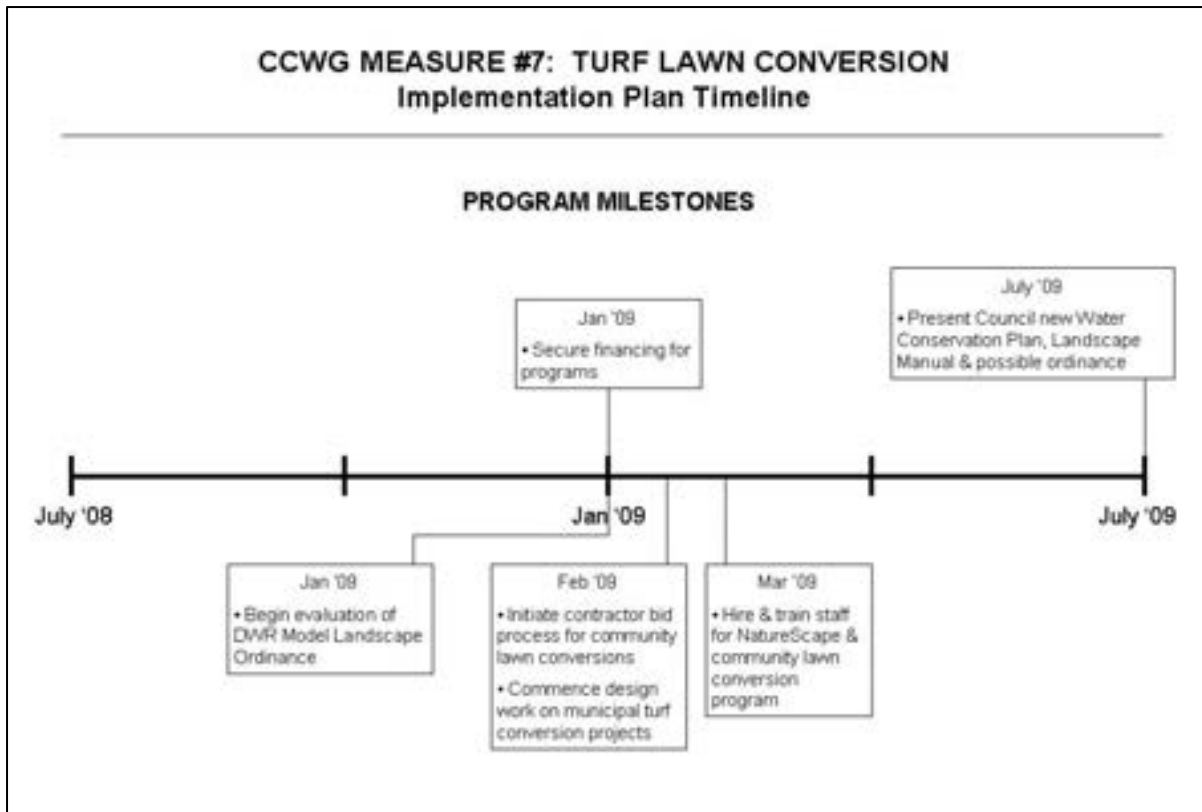
## **PERFORMANCE METRICS**

The program performance for all four components – NatureScape, Residential & Business Turf Conversion, Municipal Facilities Turf Conversion and Landscape Regulations Update – will be measured by a suite of metrics. The NatureScape and Residential & Business Turf Conversion components will be assessed based on the number of participants, square footage of landscaping certified/converted and the resulting estimated water savings. The Municipal Turf Conversion component will also be evaluated based on the square footage of landscaping converted and the estimated water savings. Actual water savings from program implementation may also be quantifiable through the assistance of the local water districts. The Landscape Regulations Update will be evaluated based on its incorporation of new water-conserving landscape design elements that comply with new state regulations, if approved and implemented by City Council.

In relation to the City's current greenhouse gas (GHG) inventory protocol, emissions from water use (i.e. energy used to import, treat and dispose of water) are not directly quantified, rather the protocol only includes emissions from energy associated with locally pumping and treating water within municipal boundaries. However, City staff will be able to estimate the program's carbon reductions based on the California Energy Commission's kWh per gallon conversion factor currently in development. Likewise, staff is now working with the California Air Resources Board, ICLEI and the California Climate Action Registry to develop new local government GHG emissions protocols which would integrate water use into emissions estimates.

## **TIMELINE**

Component #1 (NatureScape), #2 (Residential & Business Turf Conversion) and #3's (Municipal Facilities Turf Conversion) implementation could be commenced within a few months after receiving Council approval and the necessary funding. Finally, the Landscape Regulations Update (#4) could commence immediately, but would require evaluation of DWR's model ordinance (released on January 1, 2009) before development of a City-specific standard and revisions to the Landscape Manual and the Water Conservation Plan Guidelines (estimated to take 6 months) could occur. In addition, Council action on a new landscape ordinance, if deemed necessary, would require public notice and public readings before formal adoption. The program's timeline is summarized below:



## BUDGET

The annual program costs associated with the NatureScape and Residential & Business Turf Conversion components combined are \$202,800. It is estimated that the Municipal Facilities Turf Conversion would cost \$300,000 annually, while the Landscape Regulations Update component is estimated to cost \$156,380. These cost estimates would cover all personnel, supplies and services. These program costs assume full funding of all seven CCWG measures and will leverage each measure's budget to partially cover administrative and performance tracking costs. While components #1 and #2 would need funding indefinitely to maintain them, the Landscape Regulations Update component would only continue until the ordinance was developed and possibly adopted (approximately through CY 2010). However, the State's proposed Model Water Conservation Ordinance includes a requirement for ongoing community water auditing generating a need for an extra Open Space Division staff person estimated at \$202,350 annually. The Municipal Facilities Turf Conversion would continue only until all selected sites had been re-landscaped with water-saving plants and efficient irrigation systems. Implementation costs would be partially offset by available water district incentives. In addition, municipal water cost savings would average approximately \$7,900 annually for every acre of turf lawn area converted to water-wise landscaping. There are potentially a variety of possible funding sources for Measure #7 including a carbon offset fee, franchise fee, local fee authority and a general obligation bond. The program's budget is outlined below:

**CCWG #7 - Outdoor Water Conservation Program - Budget**

	<b>Item</b>	<b>One-Time Cost</b>	<b>Annual Cost</b>
NatureScape, Residential & Business Turf Conversions*	City Staff	-----	\$88,000
	Interns	-----	\$49,000
	Marketing	-----	\$20,000
	Other Commodities	-----	\$45,800
	TOTAL	-----	\$202,800
Municipal Facilities Turf Conversion	City Staff	-----	\$50,000
	Other Commodities	-----	\$250,000
	TOTAL	-----	\$300,000
Landscape Regulations Update	City Staff	\$156,380	\$202,350
	TOTAL	\$156,380	\$202,350
<b>TOTAL</b>		<b>\$156,380</b>	<b>\$705,150</b>

\*Assumes cost sharing between CCWG Measures #3, 5 & 7 for staff time & program materials

## OVERALL PROGRAM ADMINISTRATION

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### FINANCING OPTIONS

To fund the program, staff has identified and analyzed a variety of financing options (summarized in Table 3) to support the seven measures and their budgets estimated at \$1,479,380 in one-time costs and \$2,419,150 in annual costs. These budgets include costs associated with staff time, materials and contractor services to implement the programs as well as capital improvement projects. Additional costs associated with providing upfront capital for residents and businesses to install renewable and energy-efficiency improvements (Measure #5) is not included and would be dependent on the level of community program participation, but could easily reach \$50,000,000 over 5-10 years (assumes 5,000 homes/businesses participating at \$10,000 per property). If additional funds are not secured, there would be significant implications on the level of implementation possible for the seven measures (Table 4).

As a result, staff is recommending that the City pursue a variety of funding sources to meet both the long-term, ongoing program management costs as well as the short-term, large upfront capital improvement costs required to implement the seven measures. Sustainable, long-term funding could be secured through establishment of a “local fee authority” and/or increasing the City’s energy franchise fee. A local fee authority has been granted in the past by the state legislature to enable local governments to fund environmental programs and services. For example, Chula Vista received fee authority under Assembly Bill 939 to fund municipal solid waste, recycling and household hazardous waste programs. To secure funding for the seven proposed climate-related programs, the City could engage state representatives to pursue legislation allowing fee authority for local greenhouse gas emissions reduction efforts. The City’s current energy franchise fee - paid by SDG&E (and passed through to the customer) for the nonexclusive right to install and maintain equipment on highways, streets or public rights of way - is 1.25% and 2% of citywide annual gross electricity and natural gas revenues, respectively. In 2002, the California Public Utilities Commission (CPUC) approved a SDG&E franchise fee increase for the City of San Diego of 3.53% (electricity revenues) in order to underground power lines in residential areas. Chula Vista could pursue CPUC approval to increase the City’s energy franchise fees to support its greenhouse gas reduction efforts. Because a local fee authority and franchise fees are based on each individual ratepayer’s consumption level, both funding mechanisms also help promote energy conservation in the community by rewarding ratepayers who consume less energy with lower fee amounts. Both potential revenue sources would be used to reimburse the City for staff time and materials costs associated with ongoing program implementation and reporting.

Unlike a local fee authority or franchise fee, a public bond issued by the City and secured through increased sales tax, transient occupancy tax and/or property taxes could quickly provide large, upfront capital improvement funds required to implement some of the seven measures. The bonds could have two specific applications: (1) provide capital funds for energy efficiency and solar retrofits for residential and business facilities (Measure #5) and (2) provide funds for public purpose climate-related programs such as municipal renewable energy installation, alternative fuel fleet improvements and turf conversion. Under application #1, participating property owners would elect to be part of a special assessment district and their increased property fees would be applied to the bond’s debt service. Under application #2, all Chula Vista property owners would vote in a general election whether to authorize a municipal bond issuance

**Table 3: Summary of financing options and their applicability to the CCWG measures**

<b>FUNDING SOURCE*</b>	<b>DESCRIPTION</b>	<b>ANALYSIS</b>	<b>CCWG MEASURES</b>
<i>Building Permit Fees</i>	The City's building permit fees could be increased to cover the additional costs associated with implementing a citywide, mandatory green building standard.	Because there is a nexus between permit fee revenues and city development levels, permit fees may not provide a consistent funding source. Therefore, it may be more useful as a supplement to another long-term funding source.	<b>4, 5</b>
<i>Carbon Offset Fee</i>	A fee for developers and builders to "offset" their carbon emissions if they are unable to meet citywide, green building standards.	These funds would be used to pay for on-the-ground energy efficiency, renewable energy and alternative fuel vehicle improvement projects. The fund could also be incorporated into the CEQA project review and mitigation process.	<b>1, 2, 4, 5, 7</b>
<i>Franchise Fee</i>	The City's franchise fee with SDG&E for gross electricity and natural gas delivery could be increased (currently at 1.25% and 2% of citywide annual gross electricity and natural gas receipts, respectively).	Currently, the City of San Diego has a higher SDG&E franchise fee than Chula Vista (5.78% of electricity and 1.03% of natural gas revenues).	<b>All - Staff &amp; Resources 1, 5, 7 - Public Improvements</b>
<i>Grants</i>	Grant funding could be solicited from local, state and federal agencies.	Grant funding is typically short-lived and project-specific (i.e. not for ongoing programs). Therefore, it may be more useful as a supplement to another long-term funding source.	<b>All</b>
<i>Local Fee Authority</i>	A fee authority would enable the City to place a local surcharge on utility bills and would require state legislature approval.	Similar to how AB 939 created a fee authority for local governments to fund solid waste/recycling programs, the City could pursue local fee authority for greenhouse gas emissions reduction programs. The City would need to engage local state legislators to pursue the fee authority.	<b>All - Staff &amp; Resources 1, 5, 7 - Public Improvements</b>
<i>Public Bond</i>	A public bond could be issued and secured through increased sales tax, transient occupancy tax and/or property tax.	A bond could have two possible applications: (A) Pay for financing energy efficiency & renewable energy improvements on private properties and the participating property owners would elect to be part of a special assessment district to payback the bond. (B) Through a general election, all Chula Vista property owners could elect to issue a bond to fund public purpose climate change-related programs (such as municipal renewable energy and alternative fuel fleet improvements).	<i>Assessment Districts:</i> <b>5 - Staff &amp; Private Improvements</b> <i>General Obligation:</i> <b>1, 5, 7 - Staff &amp; Public Improvements</b>

\*Additional research is needed to ensure that City is in compliance with Proposition 218 and applicable tax laws

and assess themselves an additional fee to repay the debt service. The amortization schedule for either bond application is estimated to be between 10-15 years (solar energy systems are required by State legislation to have at least 25-year warranties). Staff is recommending that the fee assessment be structured to include solar energy system replacement costs adding extra value for program participants and ensuring an economically and environmentally sustainable future.

Other potential funding sources for the seven climate-related measures include establishing a City-controlled carbon offset fund, increasing building permit fees and applying for public grants. As part of the City's CEQA environmental review process and new Green Building Standard (Measure #4), the City could create a fee system for developers and builders to "offset"



their carbon emissions if they are unable to meet CEQA significance thresholds for a project's greenhouse gas emissions impacts or comply with the new citywide building standards. These funds would be used to subsidize on-the-ground energy efficiency, renewable energy and alternative fuel vehicle improvements at municipal facilities or within existing building stock preferably targeting lower income families and service institutions. Increasing building permit fees would have a more limited application and be mainly used to cover the additional costs associated with administering a citywide, mandatory green building standard. It should be noted that both CEQA reviews and permit fees are directly linked to development levels and may not provide consistent, long-term funding. Finally, grant funds could be solicited from local, state and national sources, but the funds are typically short-lived and project-specific (i.e. not for ongoing programs). Therefore, staff recommends that a carbon offset fund, increased building permit fees and public grant funds be pursued as part of the measures' financing strategy, but should be used primarily to supplement other long-term funding sources such as a local fee authority or a franchise fee increase.

**Table 4: Implications on program implementation if no new funds are secured**

MEASURE #	POLICY/PROGRAM	CURRENT FUNDING? (SOURCE)	IMPLICATIONS
Admin.	Emissions Tracking & Reporting	Partial (General Fund)	- Only ICLEI participation - No 3rd party verification - No future AB32 compliance
1	100% Clean Vehicle Replacement Policy for City Fleet	Partial (Vehicle Replacement Fund)	- Delayed implementation - No biodiesel use
2	100% Clean Vehicle Replacement Policy for City-Contracted Fleet Services	Partial (General Fund)	- No H2ICE van project - No H2CNG bus project
3	Business Energy Assessments	Full Expected (SDG&E)	- Funding only thru 12/11
4	Green Building Standard	Full Expected (Permit Fees/ SDG&E)	- Funding only thru 12/11
5	Solar & Energy Efficiency Conversion	None	- Only solar PV code creation - No community solar program
6	Smart Growth Around Trolley Stations	Partial (Various)	- Delayed implementation
7	Outdoor Water Conservation	Partial (General Fund)	- Limited NatureScape program - Delayed regulations update - No community turf replacement - No municipal turf replacement

## **IMPLEMENTATION COORDINATION, EMISSIONS TRACKING & REPORTING**

While various departments will be responsible for implementing the specific measures (see individual implementation plans for details on departmental roles and responsibilities), the Department of Conservation & Environmental Services will coordinate overall measurement, evaluation and reporting of the seven climate protection measures and the resulting greenhouse gas emissions reductions. The primary tool for tracking the emissions reductions will continue to be an annual, citywide greenhouse gas emissions inventory with technical assistance provided by ICLEI and the California Climate Action Registry. Staff is currently working with ICLEI, the California Air Resources Board and the California Climate Action Registry to develop a more robust emissions protocol specifically for local governments. With the new protocol, staff will be able to more accurately track and report the impacts of the seven climate protection measures.

The City will also begin to participate in the verification process under the California Climate Action Registry program. Verification is performed by an approved third-party contractor to insure that the emissions data is accurate, transparent and consistent with all reporting guidelines. Participation in the California Climate Action Registry will help the City measure and manage emissions from municipal operations and facilities, while preparing Chula Vista for potential new regulations under the California Global Warming Solutions Act (AB32). Registry participation will also enable Chula Vista to document carbon reductions for consideration under any future emissions trading system.

The annual cost for implementation coordination, emissions tracking and reporting is estimated to be \$93,300. This cost assumes full funding for CCWG measures #3, 5 and 7 in order to partially cover these administrative and performance tracking costs. The program's annual budget is outlined below:

### **CCWG Admin - Coordination, Tracking & Reporting - Budget**

<b>Item</b>	<b>One-Time Cost</b>	<b>Annual Cost</b>
City Staff	-----	\$64,000
Registry Memberships	-----	\$4,900
Emissions Inventory Verification	-----	\$10,000
Other Commodities	-----	\$14,400
<b>TOTAL</b>	-----	<b>\$93,300</b>

**APPENDIX A – Quantity of vehicles to be replaced each year with hybrid, alternative fuel or ultra low emissions substitutes (by vehicle class)**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Intermediate Sedan	3	7	6	3	2	0	7	0	5	5
Full Size Sedan	0	0	2	3	1	0	0	0	0	0
Compact SUV	1	0	3	3	0	1	1	4	3	2
Large SUV	0	1	0	0	0	2	1	0	0	0
Intermediate Pickup Truck	4	12	5	6	7	0	14	1	2	0
Full Size Pickup Truck	0	1	5	11	14	8	9	5	3	2
Full Size Crew Cab Pickup Truck	0	1	0	0	2	0	1	2	3	1
Intermediate Van	0	2	1	1	0	0	0	2	1	2
Cargo Van	3	1	3	7	0	1	3	1	0	0
Full Size Passenger Van	0	0	1	0	2	0	0	0	0	0
Walk-in Van	0	1	0	1	1	1	0	1	0	0
Survey Truck	0	0	0	0	0	0	1	0	0	0
Full Size Utility Truck	2	1	1	2	3	1	1	0	0	0
Large Utility Truck	0	0	3	0	3	0	0	1	0	0
Flatbed Truck	0	1	1	0	0	0	0	0	1	0
<b>TOTAL</b>	<b>13</b>	<b>28</b>	<b>31</b>	<b>37</b>	<b>35</b>	<b>14</b>	<b>38</b>	<b>17</b>	<b>18</b>	<b>12</b>

**APPENDIX B – Incremental cost difference (in dollars) each year for replacing existing fleet vehicles with hybrid, alternative fuel or ultra low emissions substitutes (by vehicle class)**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Intermediate Sedan	15,000	35,000	30,000	15,000	10,000	0	35,000	0	25,000	25,000
Full Size Sedan	0	0	10,000	15,000	5,000	0	0	0	0	0
Compact SUV	7,000		21,000	21,000	0	7,000	7,000	28,000	21,000	14,000
Large SUV	0	7,000	0	0	0	14,000	7,000	0	0	0
Intermediate Pickup Truck	28,000	84,000	35,000	42,000	49,000	0	98,000	7,000	14,000	0
Full Size Pickup Truck	0	7,000	35,000	77,000	98,000	56,000	63,000	35,000	21,000	14,000
Full Size Crew Cab Pickup Truck	0	7,000	0	0	14,000	0	7,000	14,000	21,000	7,000
Intermediate Van	0	14,000	7,000	7,000	0	0	0	14,000	7,000	14,000
Cargo Van	21,000	7,000	21,000	49,000	0	7,000	21,000	7,000	0	0
Full Size Passenger Van	0	0	7,000	0	14,000	0	0	0	0	0
Walk-in Van	0	7,000	0	7,000	7,000	7,000	0	7,000	0	0
Survey Truck	0	0	0	0	0	0	7,000	0	0	0
Full Size Utility Truck	14,000	7,000	7,000	14,000	21,000	7,000	7,000	0	0	0
Large Utility Truck	0	0	21,000	0	21,000	0	0	7,000	0	0
Flatbed Truck	0	7,000	7,000	0	0	0	0	0	7,000	0
<b>TOTAL</b>	<b>85,000</b>	<b>182,000</b>	<b>201,000</b>	<b>247,000</b>	<b>222,000</b>	<b>98,000</b>	<b>252,000</b>	<b>119,000</b>	<b>116,000</b>	<b>74,000</b>

## **APPENDIX C – Conservation-focused municipal code related to businesses**

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### **Municipal Code 8.23 - 8.25: Solid Waste**

All commercial and industrial establishments shall submit recycling tonnage documentation on an annual basis to the city's conservation coordinator, due on or before January 31st, for the previous year. Annual reporting shall be on the form promulgated by the city manager, and commence on the first anniversary of the date set forth in the mandatory recycling implementation schedule as established in this chapter as July 1, 1993. Voluntary reporting prior to the required mandatory recycling is encouraged. (Ord. 2992 § 1, 2005; Ord. 2740 § 3, 1998; Ord. 2492 § 1, 1992).

## APPENDIX D – Table A from “Architecture 2030: Meeting the 2030 Challenge through Building Codes”

**Table A: 2030 Challenge Interim Code Equivalents**

CODE / STANDARD	COMMERCIAL	RESIDENTIAL
ASHRAE 90.1-2004	30% below	
ASHRAE 90.1-2007	25% below	
ASHRAE 189 (in progress)	0	
IECC 2006	30% below	30% below
California Title 24 2005		15% - 20% below <sup>13</sup>
California Title 24 2008	10% below <sup>14</sup>	
Oregon Energy Code <sup>15</sup>	25% below	30% below
Washington Energy Code	25% below	25% - 30% below <sup>16</sup>
RESNET HERS Index		65 or less
LEED NC 2.2 / Homes	New - EA Credit #1: 6 pts Renovation - EA Credit #1: 8pts	HERS Index: 65
LEED 2009 (in progress)	New - EA Credit #1: 7 pts Renovation - EA Credit #1: 9pts	
GBI Standard (in progress) <sup>17</sup>	PATH A, 8.1.1.1: 150pts	
EECC Option <sup>18</sup> (prescriptive path)		EC - 154
NBI Option <sup>19</sup> (prescriptive path)	New - Core Performance w/ enhanced measures	

NOTE: Table A above represents a set of guidelines. Each entity should assess its particular code and building energy consumption patterns and adjust the code equivalents provided in the table as appropriate. For example, those entities with aggressive GHG and energy reduction initiatives may want to increase the recommended percentage reductions. Entities with detailed information on code performance compared to their building stock are encouraged to adjust the percentage reductions to meet the 2030 Challenge targets.

<sup>13</sup> The City of Santa Barbara established meeting the 2030 Challenge target for single-family residential units at 20% below Title 24 and for high-rise residential, at 15% below Title 24.

<sup>14</sup> Based on preliminary code analysis for the California Energy Commission by Charles Eley of Architectural Energy Corporation.

<sup>15</sup> Oregon Department of Energy, "Comparison of Oregon Energy Code 2005 & ASHRAE Standard 90.1-2004".


<sup>16</sup> For residential buildings east of the Cascade Mountains, use 25% below. For residential buildings west of the Cascades, use 30% below.

<sup>17</sup> Green Building Initiative, Proposed American National Standard 01-2008P.

<sup>18</sup> Alliance to Save Energy, Energy Efficient Codes Coalition (EECC), "The 30% Solution"/EC-154. This option provides a method for modifying the prescriptive path of the code to meet or exceed the 2030 Challenge 50% reduction target.

<sup>19</sup> New Buildings Institute, Advanced Buildings Core Performance Guide with enhanced measures. This option provides a method for modifying the prescriptive path of the code to meet or exceed the 2030 Challenge 50% reduction target.

# APPENDIX E – Draft Carbon Reduction Checklist



## CARBON REDUCTION CHECKLIST

FILL OUT COMPLETELY - PLEASE PRINT

COMPANY NAME:		CONTACT:	
COMPANY ADDRESS:			
CITY:		STATE:	ZIP:
PHONE:		EMAIL:	

PROJECT INFORMATION:

PROJECT ADDRESS:		SQUARE FOOTAGE:	
PROJECT TYPE	<input type="checkbox"/> Commercial <input type="checkbox"/> Residential <input type="checkbox"/> Retrofit	PART OF DEVELOPMENT?	
SOFTWARE	<input type="checkbox"/> URBEEMS <input type="checkbox"/> PLACE3 <input type="checkbox"/> Other:	CLIMATE ZONE	<input type="checkbox"/> 7 (.15 lbs/sq ft.) <input type="checkbox"/> 10 (.35 lbs/sq ft.)
		EMISSIONS REDUCTION TARGET (pounds of CO <sub>2</sub> ):	

CREDIT CHECKLIST

DEVELOPMENT CREDITS Please list and provide supporting documentation. See attached list for credits and requirements.

<input type="checkbox"/>	LBS OF CO <sub>2</sub>
<input type="checkbox"/>	LBS OF CO <sub>2</sub>
<input type="checkbox"/>	LBS OF CO <sub>2</sub>
<b>TOTAL DEVELOPMENT CREDITS</b> (Total x sq ft = LBS OF CO <sub>2</sub> )	

ENERGY EFFICIENCY CREDITS

Prescriptive Path	CLIMATE ZONE 7	CLIMATE ZONE 10
Tankless Water Heater (EF>=.85)	<input type="checkbox"/> .4 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .4 lbs/sq ft. of CO <sub>2</sub>
Cool Roof	<input type="checkbox"/> .1 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
I-Coat Stucco	<input type="checkbox"/> .1 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
R-38 in Attic	<input type="checkbox"/> .1 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
R-49 in Attic	<input type="checkbox"/> .1 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
30/25 Window U-Factor/SHGC	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .3 lbs/sq ft. of CO <sub>2</sub>
.9 AFUE Furnace	<input type="checkbox"/> .15 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
.92 AFUE Furnace	<input type="checkbox"/> .18 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .25 lbs/sq ft. of CO <sub>2</sub>
14 SEER AC	<input type="checkbox"/> .1 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>
15 SEER AC	<input type="checkbox"/> .15 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .25 lbs/sq ft. of CO <sub>2</sub>
16 SEER AC	<input type="checkbox"/> .2 lbs/sq ft. of CO <sub>2</sub>	<input type="checkbox"/> .3 lbs/sq ft. of CO <sub>2</sub>
<b>TOTAL Prescriptive CREDITS</b> (Total x sq ft = LBS OF CO <sub>2</sub> )		(Total x sq ft = LBS OF CO <sub>2</sub> )

Performance Path

	STANDARD	PROPOSED
Space Heating (Source kBTU/h, .11 lbs/kBTU)		
Space Cooling (Source kBTU/h, .07 lbs/kBTU)		
Water Heating (Source kBTU/h, .11 lbs/kBTU)		
<b>TOTAL Performance CREDITS</b> (Total x sq ft = LBS OF CO <sub>2</sub> )		(Total x sq ft = LBS OF CO <sub>2</sub> )

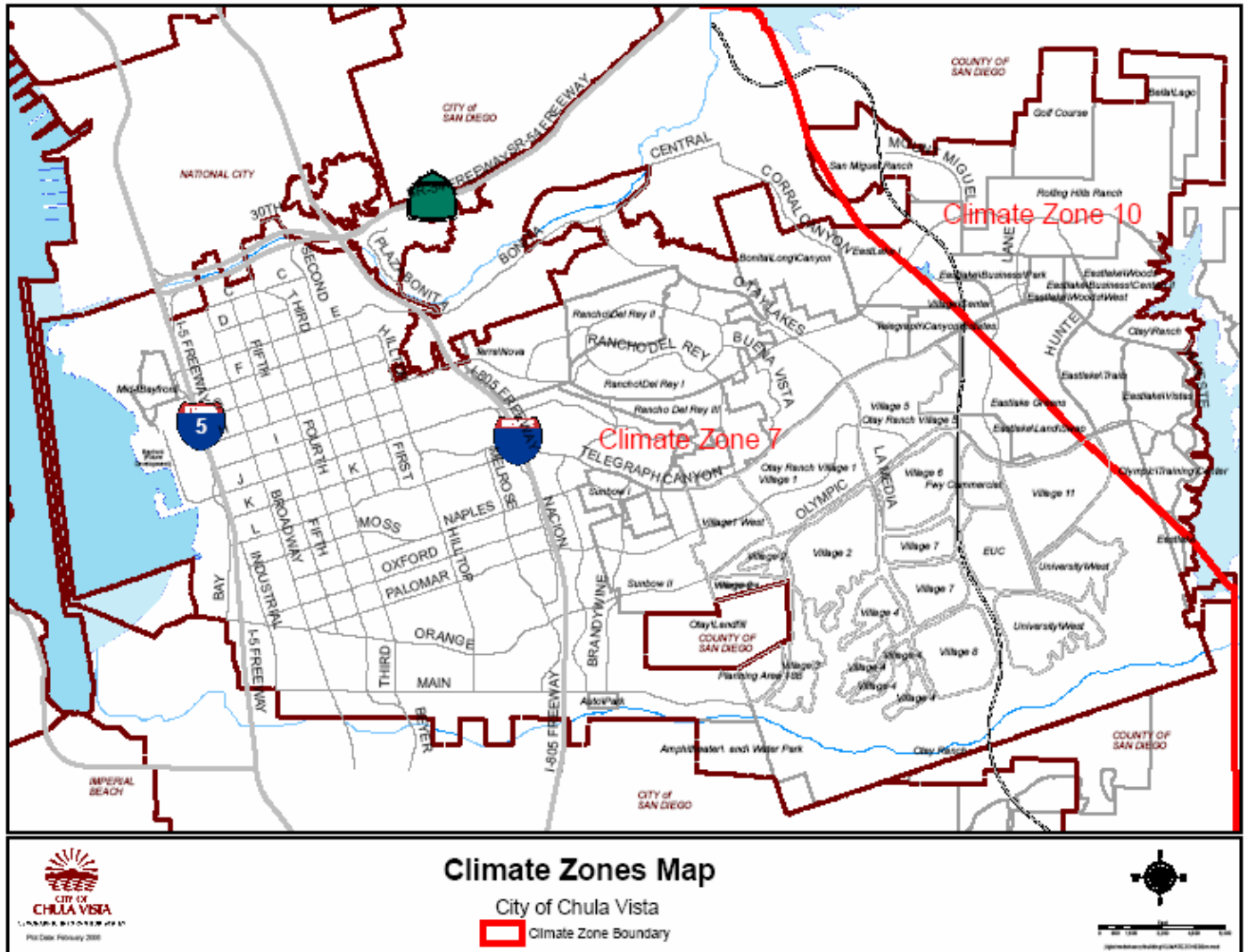
On-Site Generation Path

	CLIMATE ZONE 7	CLIMATE ZONE 10
Solar Panel KW installed	<input type="checkbox"/> 1,200 lbs/KW	<input type="checkbox"/> 1,700 lbs/KW
Solar Hot Water Heater, Solar Factor	<input type="checkbox"/> .12 lbs/sq ft. per .1 Solar Factor	<input type="checkbox"/> .12 lbs/sq ft. per .1 Solar Factor
Wind Turbine KW installed	<input type="checkbox"/> 1,400 lbs/KW	<input type="checkbox"/> 1,400 lbs/KW
Geothermal System Size	<input type="checkbox"/> 1.7 lbs/sq ft.	<input type="checkbox"/> 2.3 lbs/sq ft.
<b>TOTAL OnSite Generation CREDITS</b> Sq. Ft (lbs of CO <sub>2</sub> ) = LBS OF CO <sub>2</sub>		Sq. Ft (lbs of CO <sub>2</sub> ) = LBS OF CO <sub>2</sub>

COMPLIANCE MARGIN

<b>Additional Mitigation Fees</b>	\$2.50/sq ft =
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# APPENDIX F – Chula Vista Climate Zone Map





## APPENDIX G – Draft Existing Building Efficiency Retrofit Options

Tier 1: Minimum Requirements	Cost	Notes
Weatherization*	\$7,000	Insulation, Envelope Sealing/Duct Sealing/Duct Design, Ventilation (Attic Fan, House Fan, Ceiling Fans), Doors
Attic Insulation @ \$99/sq ft	\$80	\$0.99 per square foot
ENERGY STAR Refrigerator (<550 kWh)	\$1,500	
Low Flow Faucets/showers	\$30	\$10 faucet, \$20 showerhead
Dual/Low Flow Toilets	\$250	\$250 per unit
Programmable Thermostat	\$50	
Waterless Urinal	\$350	
Variable Frequency or Dual Speed Pool Motor	\$250	
Indoor CFL or LED Equivalent	\$40	
Outdoor CFL or LED Equivalent	\$40	
<b>Total</b>	<b>\$9,590</b>	

Tier 2: Conditional Options	Cost	Notes
Dual Paned Windows (lower)	\$5,000	
Dishwasher	\$700	
Front Load Clothes Washer	\$900	
SEER 19 or above HVAC	\$5,000	
Recirculating Water Pump	\$300	
Evapo-Transpiration (ET) Water Controller	\$300	
Tankless Water Heater	\$900	
Turf Removal/NatureScape	\$5,000	
<b>Total</b>	<b>\$13,100</b>	

Tier 3: Renewable Options	Cost	Notes
PV	\$42,000	
Solar Thermal (Water)	\$65,000	
Domestic Solar Water Heater	\$6,500	Rebates & bulk discounts included
Wind (Electricity)	\$8,000	2kW system \$5000 + Inverter and Labor
<b>Total</b>	<b>\$121,500</b>	

\*Federal Weatherization Assistance Program \$2750 avg  
Based on 2500 sq foot residence, 2.5  
bathrooms

## **APPENDIX H – Existing municipal code requiring solar hot water pre-plumbing on all new residential buildings**

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### **Municipal Code 20.04.030: Solar Water Heater Preplumbing**

All new residential units shall include plumbing specifically designed to allow the later installation of a system which utilizes solar energy as the primary means of heating domestic potable water. No building permit shall be issued unless the plumbing required pursuant to this section is indicated on the building plans. Preplumbing shall extend through the roof when the slope of the roof is less than four inches and 12 inches and when the roof covering is of clay or concrete tile. Preplumbing pipes for domestic solar hot water heating shall be insulated. This section shall apply only to those residential dwelling units for which a building permit was applied for after the effective date of the ordinance codified in this chapter.

Exception: The provisions of this chapter can be modified or waived when it can be satisfactorily demonstrated to the building official that the solar preplumbing is impractical due to shading, building orientation, construction constraints or configuration of the parcel. (Ord. 1973 § 1, 1982).